Code: 80M02

Subject: Gender Sensitization

Name of the Faculty : R V S Madhuri

Subjective Question Bank:

MODULE– I

1. Why should we study Gender Sensitization? (Remembering)
2. Narrate the story of Mary Kom and Onler? (Remembering)
3. Discuss about story of Love and Acid ? (Applying)
4. Write down love and affection of Fathers and Mothers? (Remembering)
5. Explain the Rosa Parks and their Braveheart? (Understanding)
6. Discuss the story of Dr. B. R. Ambedkar at the age of nine against caste discrimination ? (Applying)

MODULE – II

1. Explain the problems of declining Sex ratio? (Understanding)
2. Discuss the struggles against sex selective abortions? (Applying)
3. Explain the struggles with gender discrimination in case of sports? (Understanding)
4. Discuss about transgender? (Applying)
5. Explain about body parts of men? (Understanding)
6. Discuss about body parts of women ? (Applying)

Module III

1. Explain about invisible labour at home? (Understanding)
2. Discuss continous works of a mother at house? (Applying)
3. Explain the concept of load sharing with mother? (Understanding)

Signature of the Faculty   **Signature of the HOD**

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)
II Tech II Semester I Mid Question Bank 2019-20
MR18 (2018 Admitted Batch)

Subject: Gender Sensitization

Name of the Faculty: R V S Madhuri

Objective Question Bank:

1   Gender is physical and social condition of being _____
    Male
    Female
    Both a & b
    None of the above

2   Independent India was among the very ___countries in the world to have
    universal suffrage.
    first

    Second

    third

    None of the above

3   Women got the right to vote in_____
    1935
    1945
    1955
    1966

4   Article 14 of the Indian constitution guarantees the _____ of all citizens.
    Equality
    Not equality
    different
    None of the above

5   One of the very first groups of this kind was the ____of women formed by
    osmania university women.
    Equality
    Progressive Organization
    violence
    None of the above

6   Stree Shakti Sanghatana formed in ___
    1978
    1968
    1977
    1965

7   The 73rd amendment to the Indian constitution passed in 2009, provides for the
    reservation for ____of one third of the seats in village panchayats.
    women
    Gent
    violence
    None of the above

8   This is also an illustration of the process through which society shapes and trains
    people to become social individuals social scientists call this process_____
    violence
    Shakti Sanghatana

socialization

None of the above

9 Growing up male by ____further explores these issues from the perspective of a boy growing up in a small town in india

Krishna kumar

Joopaka subhadra

Khadeer babu

None of the above

10 "Girl" written by the well-known Caribbean writer ____, was first published in the New Yorker in 1978.

Krishna kumar

Joopaka subhadra

Khadeer babu

Jamaica Kincaid

11 Socialization gives rise to so many problems, schools should be places of ___ by this he means that education should try and change the way society socializes women and men.

Socialization

Counter- Socialization

inequality

None of the above

12 Girls went to a school that was designed differently ____from the boys school.

conspicuously

Shakti Sanghatana

socialization

None of the above

13 Dr.B R Ambedkar was the primary___ for the dalits in our country

spokesperson

National leader

Society

None of the above

14 Dr.B R Ambedkar family was from ratnagiri district in _____

Goregaon

Maharashtra

gandhinagar

None of the above

15 She is a five times world amateur boxing champion_____

Onler

Mary kom

Khadeer babu

None of the above

16 ____ also from Manipur was the president of the student's body in Delhi.

Onler

Khadeer babu

Mary kom

None of the above

17 Behind every successful man there is a _____

Friend

women

father

None of the above

18 Onler recalls I first met mary at the Nehru stadium in ____

Delhi

hyderabad

Maharashtra

None of the above

19   ____year Mary kom from Manipur was travelling by train to baangalore.

2000

2003

2005

2006

20   Love and ___just do not mix

Friendship

Acid

Relationship

None of the above

21   They work together on a campaign that they hope will eradicate ___in india

Acid attacks

sports

Social works

None of the above

22   Laxmi and alok now together run the _____Campaign

Stop acid attacks

Social works

Rural Development

None of the above

23   If men don't feel the need to _____, women won't have to be controlled.

control

School

domination

None of the above

24   We begin with a set of unique love letters unlike any other from_____to her husband jotiba phule

Mary kom

Khadeer babu

Savitribai phule

None of the above

25   Savitribai phule and jotiba phule are renowned for having taken up the cause of window, starting girls school in _____

Maharashtra

Delhi

Pune

None of the above

26   A hierarchical system in which cultural, political, and economic structures are dominated by males is an_____

elite model

gendered division of labour

pluralist model

patriarch

27   According to the text, the terms masculinity and femininity are most closely linked to _____

sexism

gender

sex

patriarch

28   Gender roles refer to

The rights, responsibilities, expectations, and relationships of women and men.

The subordination of women based on the assumption of superiority of men

Chromosomal and hormonal differences that cause inevitable differences in the behavior of men and women

None of the above

29 Men currently outnumber women in _____ programs

doctoral

education

psychology

allied health field

30 Women are over-represented in _____ work because it often provides greater flexibility to meet family responsibilities

semiskilled

private sector

Public sector

contingent

31 All of the following statements regarding the media and gender socialization are correct, except

More male than female roles are shown on television, and male characters are strikingly different from female ones

Few, if any, changes have occurred in the roles men and women play in movies

Most social analysts agree that the media simply reflect existing gender roles in society

None of the above

32 The _____ perspective combines the exploitation of women by capitalism with patriarchy in the home in its analysis of gender inequality

liberal feminist

socialist feminist

Public sector

None of the above

33 When were women (over21) allowed to vote in the UK ?

1935

1928

1933

1926

34 Men do not need tenderness and are less sensitive than _____

women

scientists

education

None of the above

35 Negative and partial attitude acknowledgement and assessment of the characteristics, position, role and capacity of _____

Man

Woman

Both a &b

None of the above

36 Among _____ Americans there are more than two recognized gender roles

Asian

Native

African

None of the above

37 What concept refers to the ways in which society conveys to the individual its norms or expectations for his/her behavior?

socialization

gender schema

gender scripts

gender stereotypes

38 Regarding discerning others' emotions from non-verbal cues
    men do it better than women
    women do it better than men
    Both a & b
    None of the above

39 Children as young as _____ years of age are aware of gender stereotypes
    6
    5
    3
    4

40 Men and women both disclose at equal rates about their sexual preference.
    True
    False
    Both a & b
    None of the above

41 We are attracted to a person who is similar to us in attitudes because
    we get positive reinforcement from that person agreeing with us
    the other person's agreement bolsters our sense of rightness
    we anticipate positive interactions with that person
    All of the above

42 Some kinds of love are highly idealized, such as a _____love
    Mother
    Father
    Both a & b
    None of the above

43 Many people still hold the notion that there are fixed and intrinsic differences
    between _____
    Men
    women
    Both a & b
    None of the above

44 Gender roles are continuously challenged by the
    Behavior
    women
    Both a & b
    None of the above

45 People always talk about a _____duties and responsibilities.
    Mother
    Father
    Both a & b
    None of the above

46 Reservation for women in urban local governance was introduced by which
    constitutional Amendment?
    72
    73
    74
    86

47 "One is not born but rather becomes a woman".
    Who said this?
    John Stuart Mill
    Betty Friedan
    Simone de Beauvoir
    Shulamith Firestone

48   One of the major causes of high maternal mortality rate in India is :
Anaemia among Women
Carelessness of doctors
Illiteracy
Adolescent pregnancies

49   The first woman who called for International Women's Day in 1910 was :
Margret Cousin
ArunaAsaf Ali
Clara Zetkin
Lucy Stone

50   The SAARC Decade for the Girl Child was :
1961 – 1970
1991 – 2000
1971 – 1980
1975 – 1985

51   Choose the correct expansion of MHFW.
Minimum Health, Food and Welfare
Maternal Health and family Welfare
Model Health, Food and Welfare
Ministry of Health and Family Welfare

52   Ain't I a Woman?' which emphasized the plight of black women, is written by:
Sojourner Truth
Angela Davis
Anna Julia Cooper
Kathleen Cleaver

53   Which ideological movement emerged as a response to the large-scale destruction of
environment and the subsequent impact on women:
Euphemism
Ecofeminism
Androcentricism
Existential Feminism

54   SABLA scheme focuses on
Destitute women
Adolescent girls
Maternity benefits
Victims of commercial sexual exploitation

55   The first Indian woman boxer to clinch gold medal at the Asian Games 2014 is
Laishram Sarita Devi
Aruna Mishra
Mary Kom
Sarjubala Devi

56   Which among the following is not a liberal feminist?
Mary Wollstonecraft
Harriet Taylor
Shulamith Firestone
Betty Friedan

57   The first ever women's rights convention known as Seneca Falls
Convention was held in:
1888
1848
1828
1808

58   AIWC stands for:

All Indian Women's Convention
All India Women's Conference
All India Women's Congregation
All Indian Woman Conference

59 Which among the following is not a part of Section 354A of the Indian Penal
Code:
Showing pornography against the will of a woman
Intercourse by a man with his wife during separation
A demand or request for sexual favours
Making sexually coloured remarks

60 A Working Group on 'Women's Agency and Empowerment' was constituted
under:
Sixth Five Year Plan
Twelfth Five Year Plan

First Five Year Plan

Ninth Five Year Plan

61 What was one of the strategies of Mahatma Gandhi behind using Charkha?
Women could participate even from their homes in the movement ( )
by using charkha.
Charkha was easily available
Charkha was easy to use
Charkha did not break the laws

62 Bill on Protection of Women on Domestic Violence was passed in the year
1995
2006
1980
2005

63 Newspaper run by the effort of rural women journalists
KhabarLahariya
Open Magazine
Dalit Times
Avadhnama

64 Whose efforts led to Widow Remarriage Act of 1856
Ram Mohan Roy
Ishwar Chandra Vidyasagar
PanditaRamabai
JyotiraoPhule

65 The United Nations Entity for Gender Equality and the Empowerment of Women
is also
known as :
U N Women
UNIFEM
INSTRAW
UNDG

66 When was the POCSO (Protection of Children from Sexual Offences) Act
passed?
1983
2004
2012
2013

67 A special award has been constituted which is given for Best Reporting on
Women in Panchayati Raj. What is the name of that award?

Durga Bai Deshmuk Award
Indira Award
Sarojini Naidu Award
Mother Teresa Award

68   One among the following is a woman cricketer who received the Padmasri Award.
      Choose the correct answer:
      Anjum Chopra
      AnjumShiya
      Manju Chopra
      Priti Bhalla

69   Who said "I don't wish them (women) to have power over men, but over themselves"?
      Simone de Beauvoir
      Mary Wollstonecraft
      Rosemarie Tong
      Elshtain

70   Mark the odd one out
      Right to Information – Aruna Roy
      Narmada Bachao Movement – Medha Patkar
      Chipko Movement - Sundar Lal Bahuguna
      Anti- Corruption Movement – Mohsina Qidwai

71   The famous Shah Bano case is related to Muslim wife's:
      Right to Divorce
      Right to Separation
      Right to maintenance after Divorce
      Right to Husband's property

72   Which among the following Acts had declared polygamy among Hindus to be illegal?
      Sharada Act 1929
      The Hindu Marriage Act 1955
      The Hindu succession act 1956
      Shariat Bill 1937

73   The UN Decade of Women 1976-85 ended with the Conference in:
      Nairobi
      Beijing
      Bangkok
      Stony point, New York

74   The Child Marriage Act amended in ------- (year) raised the minimum age of marriage for girls from 15 to 18 years.
      1986
      1976
      1929
      1991

75   A world Conference on the issues of women was organised by the United Nations in 1975. Which among the following was the venue?
      Mexico
      Beijing
      Copenhagen
      Nairobi

76
      In the Population Census of 2011, it was revealed that the population ratio of India was -----females per………. of males

940/1000
500/1000
1000/940
600/900

77 Causes for Decling Sex Ratio
Selective terminations of pregnancy

female infanticide

female babies are more likely to be undernourished

All

78 are the reason is basically that a girl is seen as a liability
She will get married and leave the house
You have to pay a huge dowry
Needs to be protected much more
 Needs to be protected much more

79 NGO's estimate that women and children are trafficked into the country annually from neighboring states for the sex trade.
10,000-15,000
10,000-15,000
13,000-25,000
5,000-50,000

80 Every year,………… children fall into the clutches of the gangs
4000
44,000
 50,000
10,000

81 The gender spectrum perceives gender as having many options it is a linear model, ranging from 100% man to ………… woman
100%
90%
60%
50%

82 When we meet a newborn baby, most of us ask the same question
how is the hospital
how many doctors checked
boy or girl
none

83 Experts who work with youth and gender issues tell us the two most common myths are these

i.gender is binary, offering only two options;

ii.gender and sex are the same thing. Summed up,

i is true
ii is true
both true
none

84 Every person is either male or female, and the distinction is based on that analysis

etiology)
physiology
person's anatomy

85   More than 63 million women are "missing" statistically across
India
world
Pakistan
Telengana

86   Studies have shown that Indian girls receive ……………education
high
less
Average
none

87   Many women – including educated, wealthy women – say they face
intense pressure
most often from mothers-in-law, to have sons.
both a and b
none

88   By analysing birth rates and the gender of last-born children, the report also
estimated that more than …………..Indian girls are not wanted by their families.
1 million
2 million
21 million
10 million

89   The challenge of gender is long-standing, probably going back millennia," wrote
the report's author, chief economic adviser…………………….., noting that
India must "confront the societal preference for boys".

Arvind Subramanian
sarojini naidu
Ambedkar
apj abdul kalam

90   The sex ratio of 927 in the ……age group is only the national average for India.
1-5
2-8
10-15
0 – 6

91   The sex ratio of Himachal Pradesh ……..
900
750
896
900

92   The sex ratio of Punjab ……..
793
486
456
123

93   The sex ratio of Chandigarh ……..
789
845
159
758

94   The sex ratio of Uttaranchal ……..

906
458
782
753

95. The sex ratio of Haryana
887
978
819
967

96. The sex ratio of Delhi
865
458
787
369

97. The sex ratio of Rajasthan
995
987
896
909

98. The sex ratio of Gujarat
879
458
825
876

99. Which state lowest sex ration
Punjab
Haryana
telengana
andhrapradesh

100. The prejudice against the girl child continues to be an issue of concern for UNICEF in India, which, together with its partners conceptualized ……….. project to address the problem of female foeticide
Initiative to increase Sex determination & Pre-Birth Elimination of Females
Initiative to Reduce Sex determination & Pre-Birth Elimination of Females
Initiative to Sex determination & Pre-Birth Elimination of Females
Initiative to Reduce Sex determination

101. Initiative to Reduce Sex determination & Pre-Birth Elimination of Females result of the project activities in Mandya district in the state of……………………., the issue of sex selection and female foeticide was put on the public agenda and created mass awareness among the people in both rural and urban areas.
telengana
Andhra pradesh
Karnataka
Haryana

102. CSR
Child sex ration
Corporate Social Responsibility
Canterbury's Community & Student Radio
Corporate social ratio

103. OSR
Open Space Reservation
Overall sex ratio
Overall Stripping Ratio

Organization Systems Renewa

104 PC&PNDT Act 1994 fetures
Prohibits sex selection before and after conception
Prohibits advertisements of such techniques for detection or determination of sex of foetus even through
Registration compulsory for facilities providing preconception and prenatal diagnostics capable if determine the sex
all

105 Stop sex selection , save the girl child concept in
PC&PNDT Act 1945
PC&PNDT Act 1956
PC&PNDT Act 1994
PC&PNDT Act 1986

106 PC&PNDT stands for
Post-conception or Pre-natal Sex determination
Pre-conception or Pre-natal Sex determination
Pre-conception or post-natal Sex determination
Post-conception or Post-natal Sex determination

107 …………has had a significant role to play in families and communities deciding they did not want child
Dowry
Study
Work
Job

108 Government policy of the two child norm has pushed many to plan their families
At least one son and at the at the most only on daughter
Tow sons
Two daughters
At least one daughter and at the at the most only on sun

109 Amniocentesis and chorionic villus sampling are sex selection techniques that became prevalent in developing countries in the
1990's
1980's
1970's
1948's

110 FASDSP
Forum Against Selective De- termination and Sex Pre-Selection
Forum Against Sex De- termination and Sex Pre-Selection
Forum Against Sex De- termination and Sex Post-Selection
Forum Against Sex De- termination and Selective post -Selection

111 The act 88 banned prenatal sex determination.
1995
1996
1999
1994

112 How to decide wheterh a person is male/female
Chromosomes
Genes
Gonads,hormones
All

113 "mosaicism." it's a rare condition that only affects about
1 in 14,000 people
1 in 16,000 people
1 in 15,000 people

1 in 12,000 people

114 ……….is one of the most fastest woman sprinters India has ever produced.
Sarojini
Dutee Chand
Savitribai Phule
mary kom

115 She won India's sprint title in
2013
2014
2015
2016

116 IAAF
Indian Association of Athletics Federations (IAAF)
International Association of Athletics Federations (IAAF)
International Assembly of Athletics Federations (IAAF)
Indian Athletics of Assembly Federations (IAAF)

117 Manabi Bandyopadhyay took charge of……………… in West Bengal's Nadia district
Krishnanagar degree College
Krishnanagar Women's College
Krishnanagar junior College
Krishnanagar university

118 manabi is the…….transgender person in the country to be appointed the Principal of a college.
first
second
third
fourth

119 Housework is invisible means something which is not noticed. A good example will be
Morning walking
Wearing clothes
breakfast in the morning
Washing clothes

120 Housework is Physically demanding means something which requires
hard work
Less work
Cleaning
Washing clothes

121 Housework is Time consuming means something which takes a
Short time to be done
Continuously to done
long time to be done
Both b and c

122 The poem "Vantillu" by
Kalamma
 Vimala
Sarojini devi
None of the above

123 Abburi Chaya Devi expresses the difference between an academic feminist vision and the material reality for modern women in her famous story
Srimathi Udyogini
srimathi
udyogini

Goda lakshmi
124 Judy Brady's
Become a wife
no wife
I want a wife
Widow
125 Gender pay gap in India refers to the difference in earnings between women and men in the paid employment and labor market.
2013
2015
2018
2016

Signature of the Faculty   **Signature of the HOD**

MR18

MALLAREDDY ENGINEERING COLLEGE (AUTONOMOUS)
<u>II B.TECH I SEM (MR17)</u>
<u>I MID EXAM QUESTION BANK</u>

SUBJECT: Hydraulics & Hydraulic Machinery

Branch: Civil Engineering

Name of the faculty: **Mr.L.M.Varun & Mr.M.Venu Gopal**

PART-A

<u>**Instructions:**</u>

1. All the questions carry equal marks

2. Solve all the questions

Q.No.	Questions	Bloom's Taxonomy Level	CO
	MODULE-1		
1	Derive the equation for loss of energy due to Hydraulic Jump	Understanding	3
	OR		
2	Find the discharge through a trapezoidal channel of width 8m and side slope of 1 horizontal to 3 vertical. The depth of flow of water is 2.4m and value of chezy's constant, C=50. The slope of bed of channel is given 1 in 4000	Evaluating	3
3	Define most economical sections of channels and derive an expression for trapezoidal channel	Understanding	3
	OR		
4	A concrete lined circular channel of diameter 3m has a bed slope of 1 in 500. Work out the velocity and flow rate for the conditions of (i) maximum velocity (ii) maximum discharge. Assume Chezy's C=50.	Evaluating	3

5	Derive an expression for the following terms
	
	   i. Specific energy and specific energy curve.
	
	   ii. Critical depth and critical velocity.
		Remembering	4

	iii. Maximum discharge in terms of critical depth		
OR		
6	Define GVF and RVF and derive Dynamic equation for a gradually varied flow	Remembering	4
7	A horizontal rectangular channel of 4 m wide carries a discharge of $16 m^3/sec$. Determine whenever a jump may occur at an initial depth of 0.5m or not. If a jump occurs determine the sequent depth to this initial depth. Also determine the energy loss in the jumps	Evaluating	4
OR		
8	Find the slope of the free water surface in a rectangular channel of width 20 m, having depth of flow 5 m. the discharge through the channel is 55 m^3/s. The bed of the channel is having a slope of 1 in 4000. Take the value of Chezy's constant C=60.	Evaluating	4
MODULE-2		
1	State Buckingham's π theorem and explain the procedure for solving problems by Buckingham's π theorem.	Understanding	
OR		
2	The efficiency ŋ of a plan depends on density ρ, dynamic viscosity μ of the fluid, angular velocity $\dot{\omega}$, diameter D, of the rotor and the discharge Q. Express ŋ in terms of dimensionless parameters using Reyleigh's method.	Analyzing	4
3	Define similitude and explain about the types of similarities.	Understanding	4
OR		
4	A pipe of diameter 1.5 m is required to transport an oil of specific gravity 0.90 and viscosity 3×10^{-2} poise at the rate of 3000 litres/sec. Tests were conducted on a 15cm diameter pipe using water at 20°C. Find the velocity of water at 20°C = 0.01 poise.	Evaluating	4
5	A 1:64 model is constructed of an open channel in concrete which has manning's N=0.014. Find the value of N for the model.	Evaluating	5

			5
	OR		
6	Explain about classification of models and scale ratios for distorted models. ii) The pressure drop in an aero plane model of size 1/10 of its prototype is 80N/cm². The model is tested in water. Find the corresponding pressure drop in the prototype. Take density of air =1.24kg/m². The viscosity of water is 0.01 poise while the viscosity of air is 0.00018 poise	Evaluating	5
7	A 1:40 model of an ocean tanker is dragged through fresh water at 2m/s with total measured drag of 12N. The skin (frictional) drag co-efficient 'f' for model and prototype are 0.03 and 0.002 respectively in the equation RF=f.AV². The wetted surface area of the model is 25m². Determine the total drag on the prototype and the power required to drive the prototype. Take r_P=1030kg/m³and p_m= 1000kg/m³.	Evaluating	5
	OR		
8	The efficiency ŋ of a plan depends on density ρ, dynamic viscosity μ of the fluid, angular velocity ẇ, diameter D, of the rotor and the discharge Q. Express ŋ in terms of dimensionless parameters using Buckingham's π theorem	Understanding	5
	MODULE-3		
1	Obtain expressions for force exerted by jet on a stationary vertical plate.	Understanding	5
	OR		

2	A jet of water of diameter 75 mm moving with a velocity of 25 m/sec strikes a fixed plate in such a way that the single angle between the jet and plate is 60°. Find the force exerted by the jet on the plate.
	
	    a) In the direction normal to the plate and
	
	    b) In the direction of the jet.
		Evaluating	5

3	Water is flowing through a pipe at the end of which nozzle is fitted. The diameter of the nozzle is 100mm and the head of water at the centre nozzle is 100mm. find the force exerted by the jet of water on a fixed vertical plate. The coefficient of viscosity is given as 0.95.	Evaluating	5

	OR		

4	**1)** A jet of water of diameter 7.5 cm strikes a curved plate at its centre with a velocity of 20m/sec. The curved plate is moving with a velocity of 8m/sec in the direction of the jet. The jet is deflected through the direction of the jet. The jet is deflected through an angle of 165°. Assuming the plate smooth find
	
	    a) Force exerted on the plate in the direction of the jet.
	
	    b) Power of the jet and
	
	    c) Efficiency of the jet.
		Evaluating	5

Signature of the Faculty   **Signature of the HoD**

OBJECTIVE QUESTIONS

1 The phenomenon occurring in an open channel when a rapidly flowing stream abruptly changes to a slowly flowing stream causing a distinct rise of liquid surface, is   [   ]

    A. none of these

    B. critical discharge

    C. water hammer

    D. hydraulic jump

2 Reynold number is the ratio of initial force and   [   ]

    A. viscosity

    B. surface tension

    C. elasticity

    D. gravitational force

3 Flow in pipes is laminar if Reynold number is   [   ]

    A. more than 3000

    B. between 2100 and 3000

    C. less than 2100

    D. none of these

4 For the most economical trapezoidal open channel,   [   ]

    A. half of the top width must be equal to one of the sloping sides

    B. the hydraulic mean depth must be equal to half the depth of flow

    C. the semicircle drawn with top width as diameter must touch the three sides of the channel

    D. All

5 The ratio of the inertia and gravitational force acting in any flow, ignoring other forces, is called   [   ]

    A. Euler number

    B. Frode number

    C. Reynold number

    D. Weber number.

6 A steady uniform flow is through   [   ]

    A. a long pipe at decreasing rate

    B. a long pipe at constant rate

    C. an expanding tube at constant rate

    D. an expanding tube at increasing rate

7 In fluids, steady flow occurs when   [   ]

    A. conditions of flow change steadily with time

    B. conditions of flow do not change with time at a point

    C. conditions of flow remain the same at adjacent point

    D. Velocity vector remains constant at a point.

8 For most economical rectangular section of a channel, the depth is kept   [   ]

A. one-fourth of the width

B. three times the hydraulic radius

C. half the width

D. hydraulic mean depth

9   Molecules of fluids get attracted due to   [   ]

A. capillarity action

B. surface tension

C. cohesion

D. adhesion

10   Uniform flow is said to occur when   [   ]

A. frictional loss in the particular length of the channel will the more than the drop in its elevation

B. size and shape of the cross-section change along a length

C. size and shape of the cross-section in a particular length remain constant

D. Frictional loss in the particular length of the channel will be less than the drop in elevation.

11   The best side slope for most economical trapezoidal section, is   [   ]

A. None of these.

B. 60°

C. 30°

D. 45°

12   The following is not a laminar flow   [   ]

A. Flow in beds in ground water

B. Flow of oil in measuring instruments

C. Flow in water pipe lines.

D. Rise of water in plants through roots

13   If velocities of fluid particles vary from point to point, the flow is said to be   [   ]

A. uniform flow

B. turbulent flow

C. laminar

D. Non-uniform flow.

For a given discharge in a horizontal frictionless channel two depths may have the same

14   specific force. These two depths are known as   [   ]

A. Specific depths

B. Sequent depths

C. Alternate depths

D. Normal depth and critical depth

15   Shooting flow can never occur   [   ]

A. Directly after a hydraulic jump

B. In a horizontal channel

C. In a mild slope channel

D. In a steep slope channel

16   Under which of the following conditions steady non-uniform flow in open channels occurs? [   ]

A. When for a constant discharge the liquid depth in the channel varies along its length

B. When a constant discharge flows at the constant depth

C. When a constant discharge flows in a channel laid at a fixed slope

D. When the discharge and the depth both vary along the channel length

17 When the depth of flow changes gradually over a length of the channel, then the flow will be termed as   [   ]

    A. Rapidly varied flow

    B. Critical flow

    C. Gradually varied flow

    D. Uniform flow

18 Non-uniform flow may caused by   [   ]

    A. The change in width, depth, bed slope etc. of the channel

    B. An obstruction, across a channel of uniform width

    C. None of the above.

    D. Both (a) and (b)

19 The channel whose boundary dimensions are not changing is known as   [   ]

    A. Rigid channel

    B. Prismatic channel

    C. Mobile channel

    D. Boundary channel

20 Flow developed due to sudden transition is   [   ]

    A. Gradually varied flow

    B. Spatially varied flow

    C. Rapidly varied flow

    D. Uniform flow

21 Gradually varied flow is a.   [   ]

    A. Steady uniform

    B. Non steady non uniform

    C. True one dimensional

    D. Steady non uniform

22 When various fluid particles move in layers with one layer of fluid sliding smoothly over the adjacent layer, then the flow is said to be a   [   ]

    A. Laminar flow

    B. Uniform flow

    C. Steady flow

    D. Turbulent flow

23 Which of the following represents unsteady uniform flow?   [   ]

    A. Flow through an expanding tube at an increasing rate

    B. Flow through an expanding tube at an constant rate

    C. Flow through long pipe in decreasing rate

    D. Flow through long pipe in constant rate

24 A flow in which the velocities of liquid particles at all sections of the pipe or channel are equal is called as a   [   ]

    A. Uniform flow

    B. Laminar flow

    C. Turbulent flow

    D. Unsteady flow

25 The equation of continuity holds good when the flow a   [   ]

    A. Is steady

    B. Is one dimensional

C. Uniform velocity of flow in all cross sections

D. All the above

26 In a rectangular channel if the critical depth is 2.0m, the specific energy at critical depth is   [   ]

A. 3.0m

B. 1.5m

C. 2.0m

D. 2.5m

27 For a given discharge in a channel at critical depth   [   ]

A. The total energy is minimum

B. The total energy is maximum

C. The specific energy is maimum

D. The specific energy is minimum

28 At critical depth   [   ]

A. The discharge is minimum for a given specific energy

B. The discharge is maximum for a given specific force

C. The discharge is minimum for a given specific force

D. The discharge is maximum for a given specific energy

29 For a given discharge in a channel the critical depth is function of a.   [   ]

A. Slope of the channel

B. Roughness of the channel

C. Geometry of the channel

D. Viscosity of the liquid

30 The most economical section of a trapezoidal channel is one which has hydraulic mean depth equal to   [   ]

A. 0.5depth

B. 0.5sloping side

C. 0.5width

D. 0.5(width + depth)

31 Uniform flow in an open channel exists when the flow is steady and the   [   ]

A. Channel is frictionless

B. Channel is non prismatic

C. Channel is prismatic

D. Channel is prismatic and the depth of flow is constant along the channel

32 Uniform flow in an channel is characterized by the following statements   [   ]

A. Total energy remains constant along the channel

B. Gradient of the total energy is parallel to the channel bed

C. Specific energy decreases along the channel

D. Total energy line either rises or falls depending upon the Froude number

33 For hydraulically efficient rectangular channel of bed width 4.0m, the depth of flow is   [   ]

A. 2.0m

B. 5.0m

C. 6.0m

D. 1.0m

34 GVF is   [   ]

A. Steady uniform flow

B. Steady non uniform flow

C. Unsteady uniform flow

D. Unsteady non uniform flow

35   In an M2 type GVF profile   [   ]

    A. $y_o > y > y_c$

    B. $y > y_o > y_c$

    C. $y_o < y < y_c$

    D. $y < y_o < y_c$

36   The flow will be in supercritical state in the following profiles   [   ]

    A. M3, S3 and M1

    B. M2, S1 and M3

    C. S2, S3 and M3

    D. S1, S2 and S3

37   In an M1 type GVF profile   [   ]

    A. $y_o > y > y_c$

    B. $y > y_o > y_c$

    C. $y_o < y < y_c$

    D. $y < y_o < y_c$

38   The hydraulic jump occurs in a channel when   [   ]

    A. Depth of flow changes from sub critical to super critical

    B. Depth of flow changes from super critical to sub critical

    C. The flow occurs in an adverse channel

    D. The flow occurs in a steep channel

39   The pressure less than atmospheric pressure is known as   [   ]

    A. Suction pressure

    B. Vacuum pressure

    C. Negative gauge pressure

    D. All of these

40   A large Reynold number is indication of   [   ]

    A. Smooth and streamline flow

    B. Laminar flow

    C. Steady flow

    D. Highly turbulent flow

41   The critical depth for a channel is given by (where q = Unit discharge (discharge per unit width) through the channel)   [   ]

    A. $(q/g)^{1/2}$

    B. $q^2/g)^{1/3}$

    C. $(q^3/g)^{1/4}$

    D. $(q/g)^{1/3}$

42   The discharge through a channel of trapezoidal section is maximum when   [   ]

    A. Width of channel at the top is equal to twice the width at the bottom

    B. Depth of channel is equal to the width at the bottom

C. The sloping side is equal to half the width at the top

D. The sloping side is equal to the width at the bottom

43 The mass per unit volume of a liquid at a standard temperature and pressure is called [ ]

A. Specific weight

B. Mass density

C. Specific gravity

D. None of these

44 According to chezy's formula Velocity V= [ ]

A. $C\surd(mi)$

B. $C\surd(2mi)$

C. $AC\surd(mi)$

D. $C\surd(m+i)$

45 Property of a fluid by which its own molecules are attracted is called [ ]

A. Adhesion

B. Cohesion

C. Viscosity

D. Compressibility

46 Specific energy E = [ ]

A. $Y+V/2g$

B. $Y+V^2/g$

C. $Y+V^2/2g$

D. None of the above

47 One cubic metre of water weighs [ ]

A. 100 liters

B. 250 liters

C. 500 liters

D. 1000 liters

48 The ratio of the inertia force to the viscous force is called [ ]

A. Reynold's number

B. Froude's number

C. Weber's number

D. Euler's number

49 The total energy line lies over the hydraulic gradient line by an amount equal to the [ ]

A. Pressure head

B. Velocity head

C. Pressure head + velocity head

D. Pressure head - velocity head

50 The alternative depths of a flow are 0.71 m and 8.26 m, then height of hydraulic jump is [ ]

A. 8.97m

B. 7.55 m

C. 0.71 m

D. 8.26 m

51 Euler's dimensionless number relates the following [ ]

A. Inertial force and gravity

B. Viscous force and inertial force

C. Viscous force and buoyancy force

D. Pressure force and inertial force

52   When the Mach number is between _____ the flow is called super-sonic flow.   [   ]

A. 1 and 2.5

B. 2.5 and 4

C. 4 and 6

D. 1 and 6

53   Mach number is significant in   [   ]

A. Supersonics, as with projectiles and jet propulsion

B. Full immersion or completely enclosed flow, as with pipes, aircraft wings, nozzles etc.

C. Simultaneous motion through two fluids where there is a surface of discontinuity, gravity force, and wave making effects, as with ship's hulls

D. All of the above

For similarity, in addition to models being geometrically similar to prototype, the following
54   in both cases should also be equal   [   ]

A. Ratio of inertial force to force due to viscosity

B. Ratio of inertial force to force due to gravitation

C. Ratio of inertial force to force due to surface tension

D. All the four ratios of inertial force to force due to viscosity, gravitation, surface tension, and elasticity

55   The ratio of the inertia force to the _____ is called Euler's number.   [   ]

A. Pressure force

B. Elastic force

C. Surface tension force

D. Viscous force

56   Select the correct statement   [   ]

A. Weber's number is the ratio of inertia force to elastic force

B. Weber's number is the ratio of gravity force to surface tension force

C. Weber's number is the ratio of viscous force to pressure force

D. Weber's number is the ratio of inertia force to surface tension force

57   Reynolds number is significant in   [   ]

A. Supersonics, as with projectile and jet propulsion

B. Full immersion or completely enclosed flow, as with pipes, aircraft wings, nozzles etc.

C. Simultaneous motion through two fluids where there is a surface of discontinuity, gravity forces, and wave making effect, as with ship's hulls

D. All of the above

58   Reynold's number is the ratio of inertia force to   [   ]

A. Pressure force

B. Elastic force

C. Gravity force

D. Viscous force

59   The value of bulk modulus of a fluid is required to determine   [   ]

A. Reynold's number

B. Froude's number

C. Mach number

D. Euler's number

60   Principle of similitude forms the basis of   [   ]
      A. Comparing two identical equipments
      B. Designing models so that the result can be converted to prototypes
      C. Comparing similarity between design and actual equipment
      D. Hydraulic designs

61   A flow is called sub-sonic, if the Mach number is   [   ]
      A. Less than unity
      B. Unity
      C. Between 1 and 6
      D. More than 6

62   Froude number is significant in   [   ]
      A. Supersonics, as with projectile and jet propulsion
      B. Full immersion or completely enclosed flow, as with pipes, aircraft wings, nozzles etc.
      C. Simultaneous motion through two fluids where there is a surface of discontinuity, gravity
          forces, and wave making effect, as with ship's hulls
      D. All of the above

63   For hypersonic flow, the Mach number is   [   ]
      A. Unity
      B. Greater than unity
      C. Greater than 2
      D. Greater than 4

64   The velocity corresponding to Reynold number of 2800, is called   [   ]
      A. Sub-sonic velocity
      B. Super-sonic velocity
      C. Lower critical velocity
      D. Higher critical velocity

65   When the Mach number is more than 6, the flow is called   [   ]
      A. Sub-sonic flow
      B. Sonic flow
      C. Super-sonic flow
      D. Hyper-sonic flow

66   The ratio of the inertia force to the viscous force is called   [   ]
      A. Reynold's number
      B. Froude's number
      C. Weber's number
      D. Euler's number

67   The force present in a moving liquid is   [   ]
      A. Inertia force
      B. Viscous force
      C. Gravity force
      D. All of these

      If the number of fundamental dimensions equals 'm', then the repeating variables shall be
68   equal to: [   ]
      A. m and none of the repeating variables shall represent the dependent variable.
      B. m + 1 and one of the repeating variables shall represent the dependent variable

C. m + 1 and none of the repeating variables shall represent the dependent variable.

D. m and one of the repeating variables shall represent the dependent variable.

69   The Reynolds number for flow of a certain fluid in a circular tube is specified as 2500. What will be the Reynolds number when the tube diameter is increased by 20% and the fluid velocity is decreased by 40% keeping fluid the same?   [   ]

    A. 1200

    B. 1800

    C. 3600

    D. 200

70   The square root of the ratio of inertia force to gravity force is called   [   ]

    A. Reynolds number

    B. Froude number

    C. Mach number

    D. Euler number

71   An aeroplane is cruising at a speed of 800 kmph at altitude, where the air temperature is 0° C. The flight Mach number at this speed is nearly   [   ]

    A. 1.5

    B. 0.254

    C. 0.67

    D. 2.04

72   A dimensionless group formed with the variables ρ (density), ω (angular velocity), μ (dynamic viscosity) and D (characteristic diameter) is: [   ]

    A. $\rho\omega\mu / D2$

    B. $\rho\omega\, D2\, \mu$

    C. $\rho\omega\mu\, D2$

    D. $\rho\omega\mu D$

73   The time period of a simple pendulum depends on its effective length I and the local acceleration due to gravity g. What is the number of dimensionless parameter involved?   [   ]

    A. Two

    B. One

    C. Three

    D. Zero

74   In a fluid machine, the relevant parameters are volume flow rate, density, viscosity, bulk modulus, pressure difference, power consumption, rotational speed and characteristic dimension. Using the Buckingham pi (π) theorem, what would be the number of independent non-dimensional groups?   [   ]

    A. 3

    B. 4

    C. 5

    D. None of the above

75   Consider the following statements: 1. Dimensional analysis is used to determine the number of variables involved in a certain phenomenon   2. The group of repeating variables in dimensional analysis should include all the fundamental units.   3. Buckingham's π theorem stipulates the number of dimensionless groups for a given phenomenon.   4. The coefficient in Chezy's equation has no dimension. Which of these are correct?   [   ]

    A. 1, 2, 3 and 4

B. 2, 3 and 4

C. 1 and 4

D. 2 and 3

Assertion (A): Reynolds number must be same for the model and prototype immersed in subsonic flows.   Reason (R): Equality of Reynolds number for the model and prototype satisfies the dynamic similarity criteria.

76   [   ]

A. Both A and R are individually true and R is the correct explanation of A

B. Both A and R are individually true but R is not the correct explanation of A

C. A is true but R is false

D. A is false but R is true

A model test is to be conducted in a water tunnel using a 1: 20 model of a submarine, which is to travel at a speed of 12 km/h deep under sea surface. The water temperature in the tunnel is maintained, so that is kinematic viscosity is half that of sea water. At what speed is the model test to be conducted to produce useful data for the prototype?

77   [   ]

A. 12 km/h

B. 240 km/h

C. 24 km/h

D. 120 km/h

A sphere is moving in water with a velocity of 1.6 m/s. Another sphere of twice the diameter is placed in a wind tunnel and tested with air which is 750 times less dense and 60 times less viscous than water. The velocity of air that will give dynamically similar conditions is:

78   [   ]

A. 5 m/s

B. 10 m/s

C. 20 m/s

D. 40 m/s

The model of a propel1er, 3 m in diameter, cruising at 10 m/s in air, is tested in a wind tunnel on a 1: 10 scale model. If a thrust of 50 N is measured on the model at 5 m/s wind speed, then the thrust on the prototype will be:

79   [   ]

A. 20,000 N

B. 2,000 N

C. 500 N

D. 200 N

A 1.0 m log model of a ship is towed at a speed of 81 cm/s in a towing tank. To what speed of the ship, 64 m long does this correspond to?

80   [   ]

A. 7.20 m/s

B. 6.48 m/s

C. 5.76 m/s

D. 3.60 m/s

A ship model 1/60 scale with negligible friction is tested in a towing tank at a speed of 0.6 m/s. If a force of 0.5 kg is required to tow the model, the propulsive force required to tow the prototype ship will be:

81   [   ]

A. 5 MN

B. 3 MN

C. 1 MN

D. 0.5 MN

A 1:256 scale model of a reservoir is drained in 4 minutes by opening the sluice gate. The time required to empty the prototype will be:

82   [   ]

A. 128 min

B. 64 min

C. 32 min

D. 25.4 min

83   A ship whose full length is 100 m is to travel at 10 m/s. For dynamic similarity, with what velocity should a 1: 25 model of the ship be towed?   [   ]

A. 2 m/s

B. 10 m/s

C. 25 m/s

D. 25 m/s

84   A 1/25 model of a ship is to be tested for estimating the wave drag. If the speed of the ship is 1 m/s, then the speed at which the model must be tested is   [   ]

A. 0.04 m/s

B. 0.2 m/s

C. 5.0 m/s

D. 25.0 m/s

85   A 1:20 model of a spillway dissipates 0.25 hp. The corresponding prototype horsepower dissipated will be: [   ]

A. 0.25

B. 5

C. 447.2

D. 8944.3

86   A ship's model, with scale 1: 100, has a wave resistance of 10 N at its design speed. What is the corresponding prototype wave resistance in kN?   [   ]

A. 100

B. 1000

C. 10000

D. 100000

87   A model test is to be conducted for an underwater structure which   each likely to be exposed for an underwater structure, which is likely to be exposed to strong water currents. The significant forces are known to the dependent on structure geometry, fluid velocity, fluid density and viscosity, fluid depth and acceleration due to gravity. Choose from the codes given below, which of the following numbers must match for the model with that of the prototype: 1. Mach number   2. Weber number   3. Froude number   4. Reynolds number.   [   ]

A. 3 alone

B. 1, 2, 3 and 4

C. 1 and 2

D. 3 and 4

88   The square root of the ratio of inertia force to gravity force is called   [   ]

A. Reynolds number

B. Froude number

C. Mach number

D. Euler number

89   Given power 'P' of a pump, the head 'H' and the discharge 'Q' and the specific weight 'w' of the liquid, dimensional analysis would lead to the result that 'P' is proportional to   [   ]

A. $H^{1/2} Q^2 w$

B. $H^{1/2} Q w$

C. H Q$^{1/2}$ w

D. HQ w

The drag force D on a certain object in a certain flow is a function of the coefficient of viscosity μ, the flow speed v and the body dimension L(for geometrically similar objects); then D is proportional to:

90   [ ]

A. L μ V

B. $\mu^2 v^2 / L^2$

C. $\mu^2 v^2 L^2$

D. VμL

For a 1: m scale model of a hydraulic turbine, the specific speed of the model Nsm is related to the prototype specific speed Nsp as

91   [ ]

A. $N_{sm} = N_{sp}/m$

B. $N_{sm} = mN_{sp}$

C. $N_{sm} = (N_{sp})^{1/m}$

D. $N_{sm} = N_{sp}$

Volumetric flow rate Q, acceleration due to gravity g and head H form a dimensionless group, which is given by:

92   [ ]

A. $\sqrt{(gH^5/Q)}$

B. $Q/\sqrt{gH^5}$)

C. $Q/\sqrt{gH^3}$)

D. $Q/\sqrt{g^2 H}$)

The variable controlling the motion of a floating vessel through water are the drag force F, the speed v, the length l, the density ρ. dynamic viscosity μ of water and gravitational constant g. If the nondimensional groups are Reynolds number (Re), Weber number (We), Prandtl number (Pr) and Froude number (Fr), the expression for F is given by:

93   [ ]

A. $F/\rho v^2 l^2 = f$ (Re)

B. $F/\rho v^2 l^2 = f$ (Re, Pr)

C. $F/\rho v^2 l^2 = f$ (Re, We)

D. $F/\rho v^2 l^2 = f$ (Re, Fr)

94   In flow through a pipe, the transition from laminar to turbulent flow does not depend on   [ ]

A. Velocity of the fluid

B. Density of the fluid

C. Diameter of the pipe

D. Length of the pipe

The dimensionless group formed by wavelength λ, density of fluid ρ, acceleration due to gravity g and surface tension σ, is:

95   [ ]

A. $\sigma /\lambda^2 g \rho$

B. $\sigma /\lambda g^2 \rho$

C. $\sigma g /\lambda^2 \rho$

D. $\rho /\lambda g \sigma$

96   The Reynold's number of a ship is _____ to its velocity and length.   [ ]

A. directly proportional

B. inversely proportional

C. none

D. both

97 In a flow condition where both viscous and gravity forces dominate and both the Froude number and the Reynolds number are the same in model and prototype; and the ratio of kinematic viscosity of model to that of the prototype is 0.0894. What is the model scale? [ ]

    A. 01:03.3

    B. 3.3:1

    C. 5:01

    D. 1:05

98 Dynamic similarity is said to exist between the model and the prototype, if both of them [ ]

    A. have identical velocities

    B. are equal in size and shape

    C. are identical in shape, but differ only in size

    D. none of the above

99 Geometric similarity is said to exist between the model and the prototype, if both of them [ ]

    A. have identical velocities

    B. are equal in size and shape

    C. are identical in shape, but differ only in size

    D. have identical forces

100 kinematic similarity is said to exist between the model and the prototype, if both of them [ ]

    A. have identical velocities

    B. are equal in size and shape

    C. are identical in shape, but differ only in size

    D. have identical forces

101 The velocity of jet of water traveling out of opening in a tank filled with water is proportional to [ ]

    A. Head of water (h)

    B. h^2

    C. V/T

    D. $h/2$

102 The theoretical velocity of jet at vena contracta is (where H = Head of water at venacontracta) [ ]

    A. $2gH$

    B. $H \times \sqrt{(2g)}$

    C. $2g \times \sqrt{H}$

    D. $\sqrt{(2gh)}$

103 A circular jet of water impinges on a vertical flat plate and bifurcates into two circular jets of half the diameter of the original. After hitting the plate [ ]

    A. The jets move at equal velocity which is twice of the original velocity

    B. The jets move at equal velocity which is 3 times of the original velocity

    C. Data given is insufficient to calculate velocities of the two outgoing jets

    D. The jets move at equal velocity which is equal to the original velocity

104 For hypersonic flow, the Mach number is [ ]

    A. Unity

    B. Greater than unity

    C. Greater than 2

    D. Greater than 4

105 A symmetrical stationary vane experiences a force 'F' of 100 N as shown in the given figure, when the mass flow rate of water over the vane is 5 kg/s with a velocity 'V' 20 m/s without friction. The angle 'α' of the vane is: [ ]

    A. Zero

    B. 30°

    C. 45°

    D. 60º

106 A jet of water issues from a nozzle with a velocity of 20 m/s and it impinges normally on a flat plate moving away from it at 10 m/s. If the cross-sectional area of the jet is 0.02 m² and the density of water is taken as 1000 kg/m², then the force developed on the plate will be: [ ]

    A. 10 N

    B. 100 N

    C. 1000N

    D. 2000N

107 The horizontal component of the force on a curved surface is equal to   [ ]

    A. weight of liquid vertically below the curved surface

    B. force on a vetical projection of the curved surface

    C. product of pressure at its centroid and the area

    D. weight of liquid retained by the curved area

108 A liquid jet issues from a nozzle inclined at an angle of 60° to the horizontal and is directed upwards. If the velocity of the jet at the nozzle is 18m/s, what shall approximately be the maximum vertical distance attained by the jet from the point of exit of the nozzle?   [ ]

    A. 4.2 m

    B. 12.4 m

    C. 14.3m

    D. 16.5m

109 A constant-head water tank has, on one of its vertical sides two identical small orifices issuing two horizontal jets in the same vertical plane. The vertical distance between the centres of orifices is 1.5 m and the jet trajectories intersect at a point 0.5 m below the lower orifice. What is the approximate height of water level in the tank above the point o intersection of trajectories?   [ ]

    A. 1.0 m

    B. 2.5 m

    C. 0.5 m

    D. 2.0 m

110 The efficiency of jet propulsion for a ship with inlet orifices at right angles to the direction of motion of ship is given by   [ ]

    A. [2(Vr - v) v]/ Vr²

    B. [2(Vr + v) v]/ Vr²

    C. [(Vr - v) v]/ Vr

    D. [(Vr + v) v]/ Vr

111 The force exerted by a jet impinging normally on a fixed plate is   [ ]

    A. $\rho av/4$

    B. ρav

    C. $\rho av^2/4$

    D. ρav^2

112 The force exerted by a jet impinging on a fixed plate inclined at an angle θ with the jet is   [ ]

A. ρavsin2ɵ/4

B. ρavsinɵ

C. ρav²sin2ɵ/2

D. ρav²sin2ɵ

113 The ratio of the normal force of jet of water on a plate inclined at an angle θ as compared to that when the plate is normal to the jet, is [ ]

A. $1/\sqrt{2}$

B. 0.5

C. 2

D. $\sqrt{2}$

114 The water jet after striking the flat plate will be deflected at an angle of [ ]

A. 110º

B. 60º

C. 90º

D. none of the above

115 The maximum number of jets, generally, employed in an impulse turbine without jet interference are [ ]

A. Two

B. Four

C. Six

D. Eight

116 High specific speed of turbine implies it is [ ]

A. Propeller turbine

B. Francis turbine

C. Impulse turbine

D. None of the above

117 The specific speed of a turbine is given by the equation [ ]

A. $N\sqrt{P} / H^{3/2}$

B. $N\sqrt{P} / H^2$

C. $N\sqrt{P} / H^{5/4}$

D. $N\sqrt{P} / H^3$

118 The speed of an imaginary turbine, identical with the given turbine, which will develop a unit power under a unit head, is known as [ ]

A. Normal speed

B. Unit speed

C. Specific speed

D. None of these

119 Any change in load is adjusted by adjusting following parameter on turbine [ ]

A. Net head

B. Absolute velocity

C. Blade velocity

D. Flow

120 The maximum hydraulic efficiency of an impulse turbine is (where φ = Angle of blade tip at outlet) [ ]

A. $(1 + \cos φ)/2$

B. (1 - cos φ)/2

C. (1 + sin φ)/2

D. (1 - sin φ)/2

The hydraulic efficiency of an impulse turbine is maximum when velocity of wheel is

121   _____ of the jet velocity,   [ ]

    A. One-fourth

    B. One-half

    C. Three-fourth

    D. Double

122   A hydraulic intensifier normally consists of   [ ]

    A. Two cylinders, two rams and a storage device

    B. A cylinder and a ram

    C. Two coaxial rams and two cylinders

    D. A cylinder, a piston, storage tank and control valve

The force exerted by a jet of water (in a direction normal to flow) impinging on a fixed plate

123   inclined at an angle θ with the jet is   [ ]

    A. $(waV/2g) \times \sin\theta$

    B. $(waV/g) \times \sin\theta$

    C. $(waV^2/2g) \times \sin 2\theta$

    D. $(waV^2/g) \times \sin\theta$

124   The force of impingement of a jet on a vane increases if: [ ]

    A. The vane angle is increased

    B. The vane angle is decreased

    C. The pressure is reduced

    D. The vane is moved against the jet

125   Gradually varied flow is a   [ ]

    A. Steady uniform

    B. Non steady non uniform

    C. True one dimensional

    D. Steady non uniform

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)
B.Tech IV Semester (MR 18-208-19 Admitted Students)
I Mid Examination Subjective Question Bank

Subject: PROBABILITY&STATISTICS   **Branch: ME, CE, MINING**

Name of the faculty: V NAGARAJU

Q.No.	Question	Bloom's Taxonomy Level	CO
	Module-I		
1	a) State and prove multiplication theorem	Evaluating	1
	b) State and prove addition theorem.	Evaluating	1
	OR		
2.	State and prove Baye's theorem.	Evaluating	1
3.	In a certain college 25% of boys and 10% of girls are studying Mathematics .The girls constitute 60% of the student body. (i)What is the probability that Mathematics is being studied (ii) If a student is selected at random and is found to be studying Mathematics, find the probability that the student is a girl? (iii) A boy?	Remembering	1
	OR		
4.	Three students A, B, C are in running race. A and B have the same probability of winning and each is twice as likely to win as C. Find the probability that B or C wins.	Remembering	1
5.	Apply addition theorem, From a city 3 news papers A,B,C, are being published. A is read by 20%,B is read by 16%,C is read by 14% both A and B are read by 8%, both A and C are read by 5% both B and C are read by 4% and all three A,B,C are read by 2%.what is the percentage of the population that read at least one paper.	Applying	1
	OR		
6.	Suppose a problem in statistics is given to three students A,B and C.Their probabilities of solving the same independently are 1/2,1/3 and ¼ respectly,What is the probability that exactly one of them will solve the problem?	Applying	1

OR			
7.	Of the three men, the chances that a politician, a business man or an academician will be appointed as a vice-chancellor (V.C) of a University are 0.5,0.3,0.2 respectively. Probability that research is promoted by these persons if they are appointed as a V.C are 0.3,0.7,0.8 respectively . (i)Determine the probability that research is promoted (ii)If research is promoted, what is the probability that V.C is an academician?	Applying	1
OR			
8.	Two dice are thrown. Let A be the event that the sum of the points on the faces is 9.let B be the event that at least one number is 6. Find (i) P (A∩B) (ii) P (AUB) (iii) P (A^{C}UB^C)	Applying	1

Module-II

1.	A Random variable X has the following Probability function	Evaluating	2

X	0	1	2	3	4	5	6	7
P(x)	0	K	2k	2k	3k	K^2	2k^2	7k^2+k

Determine   (i)k

(ii)Evaluate p(x<6),p(x≥6),p(0<x<5) and p(0≤x≤4)

(iii)If p(x≤k)>0.5,find the minimum value of k

(iv)Determine the distribution function of x

(v)mean

(vi)variance

OR			
2.	A continuous random variable has the probability density function f(x)= $\begin{cases} kxe^{-\lambda x}, for\ x \geq 0, \lambda > 0 \\ \qquad 0, otherwise \end{cases}$ Determine (i) k (ii)mean (iii)variance	Evaluating	2
3.	Out of 800 families with 5 children each ,how many would you expect to have(a) 3 boys (b) 5 girls (c) either 2 or 3 boys (d) at least one boy? Assume equal probabilities	Evaluating	2

	for boys and girls.		
	OR		
4.	In a Normal Distribution, 31% of items are under 45 and 8% are over 64. Determine the mean and variance of the distribution?	Evaluating	2
5.	Justify (Fit) a Poisson distribution to the following frequency distribution	Evaluating	2

X	0	1	2	3	4	5	6
f	13	25	52	58	32	16	4

	OR		
6	a)Ten coins are tossed simultaneously. Determine the probability of getting at least (i)seven heads (ii)six heads	Evaluating	
	b)Determine the Mean and Variance of a Binomial distribution?	Evaluating	2
	OR		
7.	Prove that the mean, median and mode of the Normal distribution are coincide	Evaluating	2
	OR		
8.	If x is a continuous random variable and k is a constant, then prove that (i) $Var(X+k)=Var(X)$ (ii) $Var(KX)=K^2 Var(X)$	Evaluating	2

Module-III

1.	Samples of size 2 are taken from the population 4,8,12,16,20,24 without replacement. Determine a. Mean of the population b. The standard deviation of the population . c. Mean of the sampling distribution of the means. d. The standard deviation of the sampling distribution of means	Evaluating	3
	OR		

2.	Samples of size 2 are taken from the population 2,3,6,8and11with replacement. Determine a. Mean of the population b. The standard deviation of the population . c. Mean of the sampling distribution of the means.	Evaluating	3
3.	Explain Different methods of Sampling	Understandin g	3
	OR		
4.	The mean height of students in a college is 155cms and standard deviation is 15.Show that the probability that the mean height of 36 students is less than 157 cms is 0.7881	Understandin g	3

Signature of the faculty   **Signature of HOD/MATHS**

II B.Tech. II SEMESTER BIT QUESTION BANK

MR-18 REGULATIONS   **Subject: Probability and Statistics**

Common to ME,CE,MINING branches

MULTIPLE CHOICE QUESTIONS

1) In drawing 3 balls out of 9 balls in a box there are --------- exhaustive elementary events   [

   a)$6c_3$ b)$9c_4$ c)$9c_3$ d)$7c_2$]

2) Two events A and B are said to be mutually exclusive events if -----------

   [

   a)$A \cap B = \varphi$ b) $AUB = \varphi$ c) $A^I = \varphi$ d) None

   ]

3) If P(E)=1 then the event E is called ----------   [

   a)Certain event   b) Impossible event   c) Sure event   d) A&C both   ]

4) If   P(E)=0 then the event E is called ----------   [

   ]

   a)Certain event   b) Impossible event   c) Sure event   d) A&C both

5) $P(E+E^1)$=----------   [

   ]

   a)1   b)0   c)2   d)None

6) The set of all possible events in a trail is called a ----------- for the trial.

   [

   ]

a) Sample space   b) Sample point   c) Exhaustive space   d)None

7) Two events E and E' are said to be complementary events if ---------- [   ]

a) E∩E'=φ and EUE'=S   b) E∩E'= S and EUE'= φ c) E'=S d) E'= φ

8) According to axioms of probability , probability of an event E subset of S Is ----   [

]

a) P(E)≤ 0   b) P(E) ≥ 0   c) P(E)=1   d) P(E)=0

9) According to axioms to Probability, Probability of sample space S is --------- [   ]

a) P(S)≤1   b) P(S)=0   c) P(S)=1   d) P(S)≥1

10) What is the probability for a leap year to have 52 Mondays and 53 Sundays [   ]

a)2/7   b)1/7   c)3/7   d)4/7

11) Determine the probability that a non defective bolt will be found if out of 600 bolts already examined 12 were defective   [   ]

a)0.58   b)0.68   c)0.98   d)0.88

12) What is the probability that a card drawn at random from the pack of playing cards may be either queen or a king   [   ]

a)4/13   b)3/13   c)2/13   d)5/13

13) I f S is a sample space and E_1 and E_2 are any events in S then P(E_1U E_2)=-[   ]

a) P(E_1)+P(E_2)-P(E_1 ∩ E_2)   b) P(E_1)+P(E_2)+P(E_1 ∩ E_2)

c) P(E_1)-P(E_2)-P(E_1 ∩ E_2)   d) None

14) If E_1 and E_2 are two mutually exclusive events, then P(E_1U E_2)=----[   ]

a) P(E_1)-P(E_2)   b) P(E_1)+P(E_2)   c) P(E_1)P(E_2)   d) None

15) If P(A)=0.25, P(B)=0.50 and P(AUB)=0.59 Then P(A∩B)=-------- [   ]

a)0.25   b)0.36   c)0.26   d)0.16

16) Three students A,B,C are in running race. A and B have the same probability of winning and each is twice as likely to win as C. Find the probability of winning of C.
[   ]

a)2/5   b)1/5   c)3/5   d)4/5

17) *If* E_1 and E_2 are two events in a sample space S and P(E1)≠0, Then the probability of E_2 after the event E_1 has occurred $P(\frac{E2}{E1}) = -[\ \ ]$

a) $P(E1 \cap E2)/P(E1)$ b) $P(E1 \cap E2)/P(E2)$

c) $P(E1 \cup E2)/P(E1)$ d) None

18) In a random experiment if E_1 and E_2 are two events such that P(E_1)≠0 and

P(E_2)≠0 then $P(E1 \cap E2) = - - - -$ [   ]

a) $P(E1).P(E2/E1)$ b) $P(E2).P(E1/E2)$

c) $P(E2).P(E2/E1)$ d) A and B

19) *If* $P(A \cap B) = \frac{1}{6}$, $P(A) = \frac{1}{2}$ *Then* $P\left(\frac{B}{A}\right) = - - - - - - [\ \ ]$

a)1/3   b)2/3   c)4/3   d) None

20) If the occurrence of the event E_2 is not effected by the occurrence or non occurrence of the event E_1 then the event E_2 is said to be ------of E_1[   ]

a) dependent   b) independent   c) exclusive   d) None

21 *If* $E1$ *and* $E2$ *are independent events then* $p(E1 \cap E2) = - -[\ \ ]$

a)P(E_1).P(E_2)   b) P(E_1)+P(E_2)   c) P(E_1)/P(E_2)   d) None

22 If E_1 and E_2 are independent events $P\left(\frac{E2}{E1}\right) = - - - - - [\ \ ]$

a)P(E_1)   b) P(E_2)   c) φ   d) None

23 *If A and B are two events such that* $P(A) = \frac{1}{3}, P(B) = \frac{1}{4}$,

$P(AUB) = \frac{1}{2}$, *Then* $P(A \cap B) = - - - - -[\ \ ]$

a)$\frac{1}{12}$ b)$\frac{2}{12}$ c)$\frac{3}{12}$ d)$\frac{4}{12}$

24 *If P (B)* $= \frac{1}{3}$ *then P(B')* $= - - - - - - - -[\ \ ]$

a)$\frac{1}{4}$ b)$\frac{3}{4}$ c)$\frac{2}{3}$ d)None

25 If $p(A) = \frac{1}{3}$, $P(A \cap B) = \frac{1}{12}$ then $P(A \cap B^C) = $ - - - - - - [   ]

a) $\frac{3}{4}$ b) $\frac{1}{4}$ c) $\frac{1}{3}$ d)None

26 If $P(A \cap BC) = \frac{1}{4}$, $P(B^C) = \frac{3}{4}$ find $P\left(\frac{A}{B^C}\right) = $ - - - - - - [   ]

a) $\frac{3}{4}$ b) $\frac{1}{4}$ c) $\frac{1}{3}$ d)None

27 Two marbles are drawn in succession from a box containing 10 red,30 white ,20 blue and 15 orange marbles with replacement being made after each draw find the probability that both are white----------[   ]

$\frac{4}{25}$ b) $\frac{2}{25}$ c) $\frac{3}{25}$ d) $\frac{1}{25}$

28 Two cards are drawn from a well shuffled pack of 52 cards. Then the probability that they are both aces if the first card is replaced is-----------[   ]

a) $\frac{2}{169}$ b) $\frac{3}{169}$ c) $\frac{1}{169}$ d) $\frac{4}{169}$

29 Two cards are drawn from a well shuffled pack of 52 cards. Then the probability that they are both aces if the first card is not replaced is-----------[   ]

a) $\frac{2}{221}$ b) $\frac{3}{221}$ c) $\frac{4}{221}$ d) $\frac{1}{221}$

30 Two dice are tossed then the probability of getting sum

of the numbers 12 is ----------   [   ]

a) $\frac{2}{36}$ b) $\frac{1}{36}$ c) $\frac{3}{36}$ d) $\frac{5}{36}$

31 One card is selected at random from 50 cards numbered 1 to 50 then the probability that the number on the card is divisible by 5   [   ]

a) $\frac{1}{5}$ b) $\frac{2}{6}$ c) $\frac{3}{5}$ d) $\frac{4}{5}$

32 One card is selected at random from 50 cards numbered 1 to 50 then the probability that the number on

the card is a prime number is ----------- [   ]

a) $\frac{1}{10}$ b) $\frac{2}{10}$ c) $\frac{3}{10}$ d) None

33 One card is selected at random from 50 cards numbered 1 to 50 then the probability that the number on the card ends in digit 2 is ----------- [   ]

a) $\frac{1}{10}$ b) $\frac{2}{10}$ c) $\frac{3}{10}$ d) none

34 A, B are two events such that $P(AUB) = \frac{7}{8}$, $P(A \cap B) = \frac{1}{4}$, $P(A^c)$

$= \frac{5}{8}$ then $P(B) = --- - ---------$ [   ]

a) $\frac{1}{8}$ b) $\frac{2}{8}$ c) $\frac{6}{8}$ d) $\frac{3}{8}$

35 A, B are two events such that $P(A \cap B) = \frac{1}{4}$, $P(B) = \frac{3}{4}$ then $P(A^c$

$\cap B) = ---$ [   ]

a) $\frac{1}{2}$ b) $\frac{2}{8}$ c) $\frac{2}{8}$ d) $\frac{1}{8}$

36 A lot contains 10 good articles ,4 with minor defects and 2 major defects . 2 articles are chosen from the lot at random without replacement then the probability that both are good is ----------
[   ]

a) $\frac{1}{2}$ b) $\frac{2}{8}$ c) $\frac{2}{8}$ d) $\frac{3}{8}$

37 A lot contains 10 good articles ,4 with minor defects and 2 major defects . 2 articles are chosen from the lot at random without replacement then the probability that exactly one is good ----------
[   ]

a) $\frac{1}{2}$ b) $\frac{2}{8}$ c) $\frac{1}{4}$ d) $\frac{3}{8}$

38 The probability of getting equal numbers when two dice are rolled is -------[   ]

a) $\frac{2}{36}$ b) $\frac{3}{36}$ c) $\frac{6}{36}$ d)None

39 One number is selected at random from 1 to 100 then the probability that it is a perfect square
[   ]

a) $\frac{1}{10}$ b) $\frac{2}{5}$ c) $\frac{3}{10}$ d)None

40 If a coin is tossed 'n' number of times then the total number of outcomes(exhaustive events) are --------- ---   [   ]

a)2^{n+1} b)2^n c) 2^{n+2} d) None

41 If 'n' dice are rolled at a time then the total number of outcomes(exhaustive events) are ------------ [   ]

a)6^n b) 6^{n+1} c) 6^{n+2} d)None

42 The probability that sum 8 appears in a single toss of pair of fair dice is --------- [   ]

a)2/36 b)3/36 c)6/36 d)None

43 The probability that at least one head appears in a four tosses of a fair coin is -------[   ]

a)   15/16 b) 5/16 c) 6/16 d) 3/16
44 The Probability of getting all tails in a 3 tosses of a fair coin is --------- [   ]

a)2/8 b) 3/8 c) 1/8 d) 5/8

45 A class has 10 boys and 5 girls.Three students are selected at random,one after the other Then the probability that first two are boys and third is girl. [   ]

a)   15/91 b) 5/91 c) 6/91 d) 3/91
46 From 25 tickets marked 1 to 25 inclusive one is drawn at random. Find the probability that it is a multiple of 5 or 7 [   ]

a)   5/25 b) 5/15 c) 8/25 d) 11/25
47 In a certain college 25% of boys and 10% of girls are studying Mathematics. the girls constitute 60% of students body. The probability that mathematics is being studied is ------
[   ]

a)   4/25 b) 5/25 c) 3/25 d) 6/25

48 Of the three men, the chances that a politician, a businessman and an academician will be appointed as a vice-chancellor of a university are 0.50, 0.30 and 0.20 respetively Probability that research is promoted by these people if they are appointed as V.C are 0.3, 0.7, 0.8 respectively then the probability that research is promoted in the university is -----
[   ]

a)0.52 b) 0.8 c) 0.9 d) 0.65

49 If A and B are mutually exclusive events then P(AUB)=---------   [   ]

a)P(A)+P(B)   b) P(A)-P(B)   c) P(A)*P(B)   d)None

50 Probability is a number lying between --------------------------   [   ]

a)1 to ∞   b) -∞ to 0   c) 0 and 1   d)None

51   If X is the probability distribution function given by

X	-1	0	1	2	3
f	0.3	0.1	0.1	0.3	0.2

    then E(X) is   [   ]

a)1   b)0.1   c)0.2   d)1.5

52 Discreate random variables is denoted by   [   ]

a)P(x)   b)F(x)   c)P(x)and f(x)   d)M(x)

53 How many types of random variables   [   ]

a)1   b)3   c)2   d)4

54 If X is a random variable and K is a constant ,then E(X+K)   [   ]

a)E(X)   b) E(X)+K   c)E(X)-K   d)E(X)/K

55 The limiting case of Binomial distribution is   [   ]

a)Poisson   b)Binomial   c)Normal   d)none

56 The Mean of the Geometric distribution is   [   ]

a)p   b)q   c)p/q   d)None

57 The Mean of the Geometric distribution is   [   ]

a)p   b)q   c)p/q   d)None

58 The Mean of the Binomial distribution is   [   ]

a)n   b)np   c)npq   d)nq

59 The Variance of the Binomial distribution is   [   ]

a)n   b)np   c)npq   d)nq

60 The Standard deviation of the Binomial distribution is   [   ]

a)n   b)np   c)npq   d)none

61 $If\ mean\ = 5, variance\ = \frac{10}{3}\ of\ a\ binomial\ distribution\ then\ n =$ [   ]

a)0   b)3   c)5   d)7

62 Mean of binomial distribution is 4 and variance is 2 then p=   [   ]

a)1/3   b)0.5   c)0.25   d)None

63 If a is the constant then V(a)=   [   ]

a)a   b) a^2 c) $\sqrt{a}$ d)None

Var(X+k)=   [   ]
64
a)Var(X)+k   b)Var(X)   c)Var(k)   d)None

65 Mean and Variance of the binomial distribution are 3,2, then the value of n   [   ]

a)1   b)3   c)9   d)None

66   The Distribution in which mean and variance are same   [   ]

a)Binomial   b)Poisson   c)Normal   d)None

67 If the variance of a Poisson distribution is 2 then p(x=0)=   [   ]

a)0.32   b)0.135   c)0.45   d)None

68 $X\ is\ a\ poisson\ variate\ such\ that\ \frac{5}{6}p(x = 4) = p(x = 6)\ then\ \mu =$ [   ]

a)1   b)3   c)5   d)7

69 $X\ is\ a\ poisson\ variate\ such\ that\ p(x = 3) = p(x = 5)\ then\ \mu =$ [   ]

a)$\sqrt{12}$ b)$\sqrt{15}$ c)$\sqrt{24}$ d)None

70

The Variance of the Poisson distribution is   [   ]

a)n   b)np   c)λ d)None

71 The Mean of the poisons distribution is   [   ]

a)n   b)np   c) λ d)None

72 The Poisson distribution follows how many parameters   [   ]

a)One   b)Two   c)Three   d)None

74 If the mean of a Poisson distribution is 8,then its variance is   [   ]

a)2   b)4   c)8   d)9

75 X is a Poisson variate such that $p(x = 1) = 2$ and $p(x = 2) = 1$ then $\mu = $ [   ]

a)1   b)2   c)3   d)4

76   If probability of defective bolt is 0.1 out of 400 bolts then Variance of the distribution is
   [   ]

a)40   b)20   c)6   d)None

77 The frequency function of a random variable X is given by $f(x) = cx(2 - x), 0 \le x \le 2$ then c=
   [   ]

a)1/2   b)1/4   c)3/4   d)None

78   If X has the p.d.f f(x)= K (1-x^2) for 0< x<1 then the value of K is   [   ]

a)2/3   b)1/3   c)3/2   d)None

79 If X is a continuous random variable and y=ax+b then the expected valued of y= [   ]

a)aE(X)   b)aE(X)+E(b)   c)aE(X)+b   d)None

80 The Distribution in which mean , median and mode same   [   ]

a)Normal   b)Binomial   c)Poisson   d)None

81 Var(X+k)=   [   ]

a)Var(X)+k   b)Var(X)   c)Var(k)   d)None

82 If μ = 5 and σ = 2 and x = 10 then the standard Normal variate is   [   ]

a)3　　　　　　　　　b)0.3　　　　　　　c)2　　d)2.5

83　The Standard normal curve area between z = -1 and z = 1 is nearly　　[　　]

　　a)0.5　　　　　　　b)0.69　　　　　　c)0.95　　d)None

84　The shape of the normal curve is _____　　　　　　　　　[　　]

　　a)Bell Shaped　　　　b)Binomial　c)Poisson　　d)None

85　In Normal distribution curve total area value is_____　　　　　[　　]

　　a)　　　　　　　　　　　0　　　　　b) 1　　c) 2　　　　　　　d) 4
86　If X has the p.d.f f(x)= K (1-x²) for 0< x<1 then the value of K is___　　[　　]

　　a) 2/3　　　b) 2/3　　　c) 1/3　　　d) 3/2
87　A (1.73) + A(0.81)　　　　　　　　　　　　　　　　　　[　　]

　　a) 0.7492　　　　　　b) 0.596　　　　c) 0.234　　　d) 1.235

88　A continuous function X has the probability density function given by $f(x) = cx^2, 0 \le x \le 1$ then the value of c is　　　　　　　　　[　　]

　　a) 1　　　　b) 2　　　　c) 3　　　　d) 4
89　If k is a constant, then Var(K)　　　　　　　　　　　　[　　]

　　a) 0　　　　　　b) 1　　　　c) k　　　　d) None

90　The mean of Uniform Distribution is_____　　　　　　　　[　　]

　　a) $\frac{1}{b-a}$　　　　　　b) $\frac{1}{ba}$　　c) $\frac{b+a}{2}$　　　　d) None
91　The variance of Uniform Distribution is　　　　　　　[　　]

　　a) $\frac{1}{b-a}$　　　b) $\frac{1}{ba}$　　　　c) $\frac{b+a}{2}$　　　　d) None
92　The standard deviation of Uniform Distribution is [　　]

　　$\frac{1}{b-a}$　　　　　　b) $\frac{1}{ba}$　　　　c) $\frac{b+a}{2}$　　　　d) None

93　If X is a random variable V(X)=2 then V(2X+3)=____ [　　]

　　a) 2　　　b) 4　　　　c) 8　　　　d) None

94　The graph of the Normal distribution is symmetric with respect to the line [　　]

　　a) X=μ　　　b) 0　　　　c) X　　　　d) None

95　The mean of Exponential distribution　　　　　　　　[　　]

　　a) $\frac{1}{\theta}$　　b) $\frac{1}{\theta^2}$　　　　c) θ　　　　d) None
96　The variance of Exponential distribution　　　　　　　[　　]

a) $\frac{1}{\theta}$　　　b) $\frac{1}{\theta^2}$　　　c) θ　　　d) None

97 The standard deviation of Exponential distribution [   ]

a) $\frac{1}{\theta}$　　　b) $\frac{1}{\theta^2}$　　c) θ　　　d) None

98 The mean of the Gamma distribution　　　　[   ]

a) 1　　　b) λ　　　c) λ^2　　　　d) None

99 The variance of the Gamma distribution　　　[   ]

a) 1　　　b) λ　　　　　　c) λ^2　　　d) None

100 If X is a normal variate with mean 30 and standard deviation 5 .Find the probabilities that X≥45 is [   ]

a)　　　　　　　　　　　　　　0.00135　　　b) 0.0135　　　c) 0.135　　d) None

102 The totality of the observation is called -----　　　　　[   ]

a) Population　　　b) Sample　　　c) Parameter　　　d) None

103 The statistical constants of the population are called ---------- [   ]

a) Statistic　　　b) Parameter　　　c) Sample statistic　　d) None

104 The probability distribution of a statistic is called -------　　　[   ]

a) Normal distribution　　b) Sampling distribution　　c) Binomial distribution d) None

105 The number of possible samples of size n out of N population units without replacement is---- [   ]

a)N_{C_n}　　　　b) N^n　　　c) $\frac{1}{N_{C_n}}$　　　d) None

106 The number of possible samples of size n out of N population units with replacement is---- [   ]

a)N_{C_n}　　b) N^n　　　c) $\frac{1}{N_{C_n}}$　　　　d) None

107) The finite population correction factor is -------　　　　　　　　[

a) $\frac{N-n}{N-1}$　　　b) $\frac{N-n}{n-1}$　　　c) $\frac{N-n}{N+1}$　　d) None　　　　　　　　　　]

108) A population consisting of all real numbers is an example of　　　[   ]

a)an infinite population　　　b) A finite population

c)Population　　　　　　d) None

109) The standard error of the statistic of the sample mean is ------- [ ]

a) $\frac{1}{\sqrt{n}}$ b) $\frac{\sigma}{\sqrt{n}}$ c) $\frac{\sigma^2}{\sqrt{n}}$ d) $\frac{\sigma}{n}$

110) If $\bar{x}$=157,μ=155,σ = 15 and n = 36 then Z is — — — — [ ]

a)0.8   b)0.6   c)0.08   d) None

111) The sample of size 4 has values 25,28,26,25 then variance of the sample is-[ ]

a)2   b) 2.5   c)4.2   d) None

112) The marks of five students in one subject are 45,47,49,61,48 and mean of the population is 52 then t=-
----- [ ]

a)0.5   b)0.6   c)0.7   d) None

113) If the size of the sample is 5 and size bof the population is 2000. The correction factor is ---
[ ]

a)9.99   b)0.999   c)99.9   d) None

114) Find the value of the finite population correction factor for n=10 and N=100-[ ]

a)9.99   b)0.991   c)99.9   d) None

115) How many different samples of size 2 can be chosen, from a finite population of size 25 ----
[ ]

a)320   b)310   c)300   d)330

116) How many different samples of size 2 can be choosen,from an infinite population of size 5 ----
[ ]

a)25   b)32   c)20   d)10

117) If n= 400 and σ = 2.06 the maximum error with 99% confidence is [ ]

a)0.7377   b)0.8387   c)0.6387   d)0.536

118) If n= 400 and σ = 2.06 the maximum error with 99% confidence is [ ]

a)0.7377   b)0.8387   c)0.6387   d)0.536

119) If n= 25 maximum error is 0.1 then σ is [ ]

a)2.55   b)2.12   c)0.255   d)0.025

120) If n = 81, σ = 4.5, $\bar{x}$ = 32 then 99% confidence interval for mean is [ ]

a) (30.71, 33.29)   b) (30.83, 33.16)   c) (31.02, 32.98) d) None

12
1)   In a sample of 500 people 300 are rice eaters maximum error with 99% confidence is
[   ]

a)0.05   b)0.04   c)0.06   d)0.07

12
2)   A sample of size 64 is taken from a population whose variance is 2 with probability 0.99. then the
maximum error is   [   ]

a)0.456   b)0.35   c)0.24   d)0.58

12
3)   If the maximum error with probability 0.95 is 1.2 and standard deviation of population is 10, then
sample size is   [   ]

a)26   b)266   c)267   d) 269

12
4)   If the maximum error with 99% confidence is 0.86 and size of the sample is 144,then the variance of
the population is   [   ]

a)2   b)4   c)8   d)16

12
5)   A random sample of size 169 was taken from a population whose variance is 25 and mean is 50. Then
99%confidence interval is   [   ]

a) (49,51)   b) (49,25,50,75)   c) (48,50)   d) None

12
6)   If we can assert with 95% that the maximum error is 0.5 and p=0.2, then the sample size is
[   ]

a)122   b)244   c)256   d)269

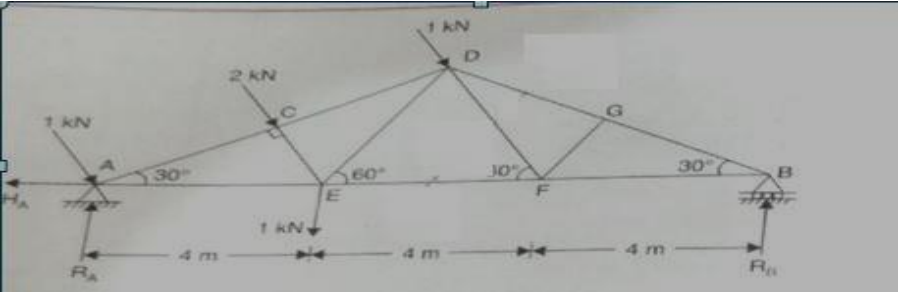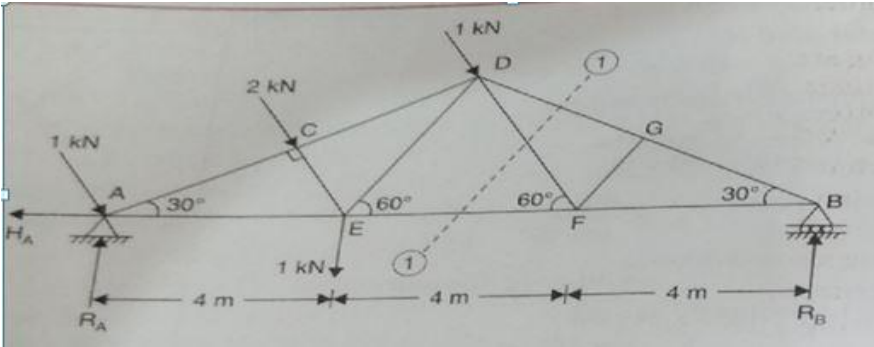**Subject: Structural Analysis**   **Branch /Specialization: Civil Engineering**
Name of the faculty: R.sumathi / Balakrishna

Instructions:

1. All the questions carry equal marks

2. Solve all the questions

Q.No.	Question	Bloom's Taxonomy Level	CO
1.	Determine the equation for strain energy stored due to axial loading.	Evaluating	1
	OR		
2.	Determine the forces in members using method of joints. Shown in below fig.	Evaluating	1
3.	A truss of span 12m span is loaded as shown in fig. Solve the forces in the member forces DG,DF and EF.using method of section	Applying	1
	OR		
4.	Solve the member forces in below truss Using method of section	Applying	1
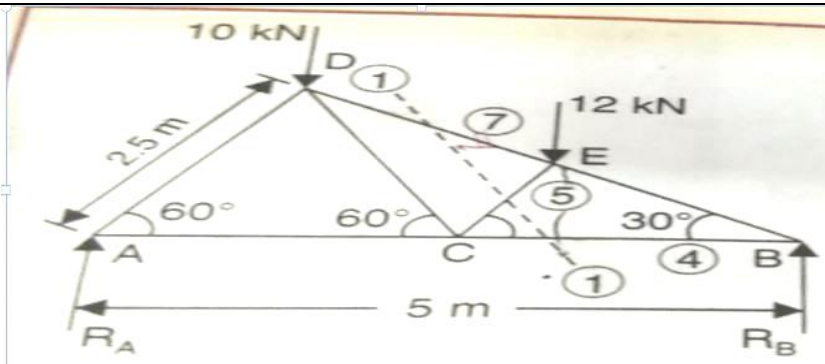
5.	Determine the vertical displacement of joint A of the steel truss shown in fig. assume E value. the cross sectional area each member is 1250 sq.m	Evaluating	1
	OR		
6.	Determine the deflection at point **C.**	Evaluating	1
7.	a)Explain the different types of frames. b)Explain the steps to find the member forces in Method of Joints.	Analyse Analyse	1
	OR		
8.	a)Explain Deflection. b)Find the expression for strain energy in bending moment	Analyse Analyse	1
Module II			
1.	A beam AB of uniform section and 6 m span is built at the ends. A u.d.l of 30 kN/m runs over left half of the span and there is an additional concentrated load of 40 kN at right quarter. Determine the fixed end moments at the ends	Evaluating	2
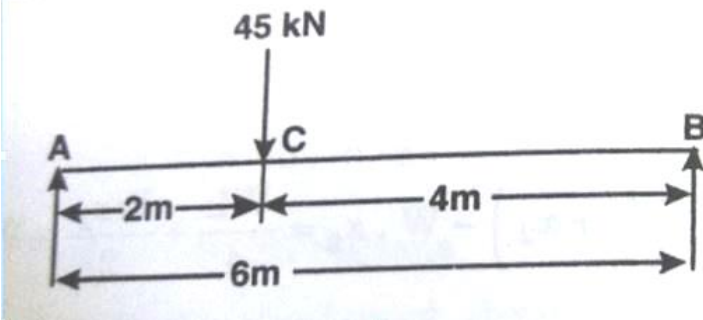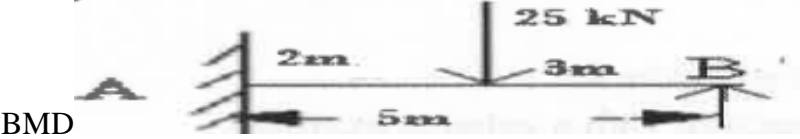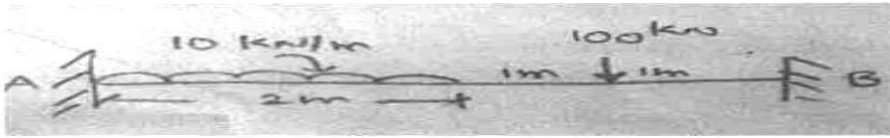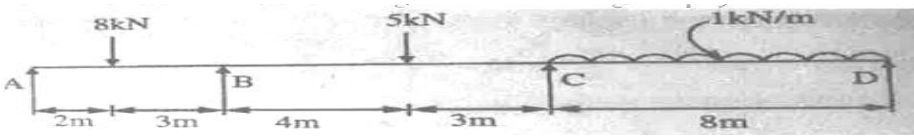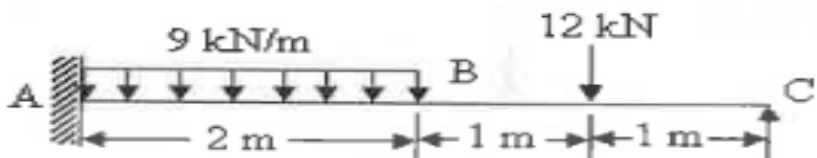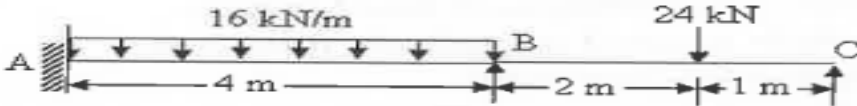
	and the reaction. Draw BMD and SFD.		
	OR		
2.	Determine support moments and Prop reaction of propped cantilever as shown below.Take EI=11000Kpa. Also draw SFD and BMD	Evaluating	2
3.	Analyse the support reactions and support moments of a fixed beam shown in figure. Also draw SFD and BMD.	Creating	2
	OR		
4.	Analyse the continuous beam using clapeyron's theorem of three moments	Creating	2
5.	Analyse the propped cantilever shown in fig and draw the SFD and BMD	Creating	2
	OR		
6.	Analyse the continuous beam using clapeyron's theorem of three moments	creating	2
7.	a)Explain the different types of beams. b)Derive clapeyrons theorem of three moments	Analyse Analyse	2
	OR		
8.	a)Explain is the Fixed end Moment for a fixed beam carrying fully udl.	Analyse	2

	b)Explain Prop reaction?	Analyse	

Module III

	A symmetrical three hinged arch has a span of 20 meters and rise to the central hinge of 5 m. It carries a vertical load of 10 kN at 4 m from the left support. Determine the reactions at the supports and bending moment at the load point.		
1.		Evaluating	3

<div align="center">OR</div>

2.	A Three hinged parabolic arch of span 25m and rise 4m carries a UDL of 25KN/m on the whole span and a point load of 100KN at a distance of 15m from the right end.Determine the following. a). Support Reactions b)Normal Thrust and Radial Shear at quarter Span.	Evaluating	3

3.	A Three hinged semicircular arch of the radius R carries a uniformly distributed load of ' w' per unit run over the whole span. Find the horizontal thrust at each support and the location and magnitude of maximum bending moment for the arch.	Analyse	3

<div align="center">OR</div>

4.	A Three hinged parabolic arch of span 30m and rise 6m carries a UDL of 20KN/m on the whole span and a point load of 80KN at a distance of 15m from the right end.Determine the following. a). Support Reactions b)Normal Thrust and Radial Shear at quarter Span.	Evaluating	3

Signature of the Faculty   **Signature of the HoD**

Subject: Structural Analysis

Branch (Common To): Civil Engineering   Name Of the Faculty: R.Sumathi/ Balakrishna

Subjective questions:

1 If (m+r > j) the structure is known as (   )

A. Stable and statically determinate

B. Stable and statically indeterminate

C. Unstable

D. None of the above

2 Principle of superposition is applicable when (   )

A. Deflections are linear functions of applied forces

B. Material obeys Hooke's law

C. The action of applied forces will be affected by small deformations of the structure

D. None of the above

3 The Castiglione's second theorem can be used to compute deflections (   )

A. In statically determinate structures only

B. For any type of structure

C. At the point under the load only

D. For beams and frames only

4 When a load crosses a through type Pratt truss in the direction left to right, the nature of force in any diagonal member in the left half of the span would (   )

A. Change from compression to tension

B. Change from tension to compression

C. Always be compression

D. Always be tension

5 The deflection at any point of a perfect frame can be obtained by applying a unit load at the joint in

Vertical direction

 Horizontal direction

Inclined direction

The direction in which the deflection is required

 ( )

A.

B.

C.

D.

6 If in a rigid-jointed space frame, (6m + r) < 6j, then the frame is ( )

A. Unstable

B. Stable and statically determinate

C. Stable and statically indeterminate

D. None of the above

7 A rigid-jointed plane frame is stable and statically determinate if Where m is number of members, r is reaction components and j is number of joints ( )

A. (m+r)=2j

B. (3m + r) = 3j

C. (m + 3r) = 3j

D. (m + r) = 3j

8 What will be Δ in case of straight members using   Castigliano's Theorem? ( )

A. 1⁄4 ΣN(dN/dP)L/AE

B. 1⁄3 ΣN(dN/dP)L/AE

C. 1⁄2 ΣN(dN/dP)L/AE

D. ΣN(dN/dP)L/AE

9 The _____ forces are used are used in the method of sections for the calculation of the internal forces.

internal rotational

 Couple rotational

Translational

 External

( )

A.

B.

C.

D.

10 For getting the normal force on the supports, we do what? ( )

A. Make the vertical sum of the forces equal to zero

B. Make the horizontal sum of the forces equal to zero

C. Make the moment sum of the forces equal to zero

D. Make the rotational sum of the forces equal to zero

11 For getting the horizontal component of the support reactions what do we do? ( )

A. Make the vertical sum of the forces equal to zero

B. Make the horizontal sum of the forces equal to zero

C. Make the moment sum of the forces equal to zero

D. Make the rotational sum of the forces equal to zero

12 The loading generally act upon the _____ of the body ( )

A. Centroid

B. Symmetrical centre

C. Rotational centre

D. Chiral centre

13 Normal force is equal to _____ ( )

A. The net horizontal force

B. The net vertical force with a negative sign

C. The net horizontal force with a negative sign

D. The net vertical force

14 If a truss consists of 8 joints, 10 members and 4 reaction components then, it is a _____ ( )

A. cantilever truss

B. deficient truss

C. redundant truss

D. none of the above

15 If n > 2j – R, then the truss is called as _____. ( )

A. perfect truss

B. redundant truss

C. deficient truss

D. none of the above

16 Which of the following statements is false about frame/truss? ( )

A. Bent member is never used in a truss

B. All members in the truss are two force members

C. Multiforce members can be used in a frame

D. Internal hinges are used to connect members in a truss

17 Redundant truss is a type of _____

perfect truss

stable truss

imperfect truss

none of the above

( )

A.

B.

C.

D.

18 Which of the following conditions is satisfied for cantilever truss? ( )

A. n > 2j – R

B. n < 2j – R

C. n = 2j – R

D. n ≠ 2j – R

19 Which axial force is determined while analyzing a truss? ( )

A. compressive force

B. tensile force

C. none of the above

D. both a. and b.

20 What should be ideally the first step to approach to a problem using method of joints? ( )

A. Draw fbd of each joint

B. Draw fbd of overall truss

C. Identify zero force members

D. Determine external reaction forces

21 If a member of a truss is in tension, then what will be the direction of force that it will apply to the joints?

Outward

Inward

Depends on case

No force will be there

( )

A.

B.

C.

D.

22 What should be ideally the first step to approach to a problem using method of joints? ( )

A. Draw fbd of each joint

B. Draw fbd of overall truss

C. Identify zero force members

D. Determine external reaction forces

23 An angle section can be used as purlin when slope of the roof truss is……….. ( )

A. Less than 30 degree

B. Less than 45 degree

C. Less than 90degree

D. Greater than 90 degree

24 Which of the following IS code define the high tensile steel

IS 4020

IS 2062

IS 961

IS221

( )

A.

B.

C.

D.

25 The most efficient section for a given beam for given cross sectional area ( )

A. I section

B. Channel section

C. Circular

D. Hollow circular

26 How many equilibrium equations are used in method of sections? (   )

A. 1

B. 2

C. 3

D. 4

27 In trusses, a member in the state of tension is subjected to:- (   )

A. push

B. pull

C. lateral force

D. either pull or push

28 In method of sections, what is the maximum no. of unknown members through which the imaginary section can pass? (   )

A. 3

B. 2

C. 1

D. 4

29 Method of substitute members is use for which type of trusses? (   )

A. complex

B. compound

C. simple

D. simple and compound

30 If a member of a truss is in compression, then what will be the direction of force that it will apply to the joints? ( )

A. Outward

B. Inward

C. compound

D. None of the above

31 Castigliano's first theorem is applicable ( )

A. for statically determinate structures only

B. when the system behaves elastically

C. only when principle of superposition is valid

D. none of the above

32 The deflection at any point of a perfect frame can be obtained by applying a unit load at the joint in ( )

A. vertical direction

B. horizontal direction

C. inclined direction

D. the direction in which the deflection is required

33 Principle of superposition is applicable when ( )

A. deflections are linear functions of applied forces

B. material obeys Hooke's law

C. the action of applied forces will be affected by small deformations of the structure

D. none of the above

34 Which of the following factors are related by work energy principle? ( )

A. displacement, time and mass

B. force, displacement and time

C. force, velocity, displacement

D. none of the above

35 A framed structure is triangular shape is ( )

A. perfect

B. imperfect

C. deficient

D. None of the above

36 A cantilever truss it is very essential to find out the reactions before analysis at ( )

A. Agree

B. Disagree

C. Partly agreed

D. None of the above

37 In_____each joint is separately treated as free bodies ( )

A. Method of joints

B. Method of section

C. Graphical method

D. None of the above

38 To design the trusses which of the following rules is followed? ( )

A. All the loads are applied by the use of cables

B. The loads are applied at the joints

C. All the loads are not applied at the joints

D. The loads are not applied at all to the joints

39 _____ trusses lie on a plane ( )

A. Planar

B. 2D

C. 3D

D. Linear

40 _____ is a structure made of slender members which are joined together at their end points. ( )

A. truss

B. beam

C. pillar

D. Support

41 Which of the following is correct? ( )

A. To know the direction of the unknown force we take the assumption of it

B. The direction of the unknown force is known to us already

C. The direction of the unknown can't be determined

D. The direction of the unknown is of no use, it is not founded

42 Vertical displacement of a point on a loaded beam is a called ( )

A. Moment

B. Deflection

C. Displacement

D. None of the above

43 The principle of virtual work is based on ( )

A. Internal energy

B. Work done

C. External loads

D. All the above

44 The principle of virtual work can be applied to elastic system by considering the virtual work of ( )

A. Internal forces only

B. External forces only

C. Internal as well as external forces

D. None of the above

45 A rigid-jointed plane frame is stable and statically determinate if ( )

A. $(m + r) = 2j$

B. $(m + r) = 3j$

C. $(3m + r) = 3j$

D. $(m + 3r) = 3j$

46 The number of independent equations to be satisfied for static equilibrium in a space structure is ( )

A. 2

B. 4

C. 3

D. 6

47 strain energy stored due to axial loading ( )

A. f2\2E

B. S/AE

C. SI

D. none of the above

48 young's modulus= ( )

A. stress/strain

B. stress

C. strain

D. bulk modulus

49 Strain energy stored due to shear is small is generally--------------- ( )

A. neglected

B. consider

C. unit

D. none of the above

50 method of joints used to find ( )

A. forces in the member

B. forces in joints

C. moments in members

D. none of the above

51 If in a pin-jointed plane frame $(m + r) > 2j$, then the frame is (Where 'm' is number of members, 'r' is reaction components and 'j' is number of joints) ( )

A. Stable and statically determinate

B. Stable and statically indeterminate

C. Unstable

D. None of the above

52 If in a rigid-jointed space frame, $(6m + r) < 6j$, then the frame is ( )

A. Unstable

B. Stable and statically determinate

C. Stable and statically indeterminate

D. None of the above

53 The three moments equation is applicable only when ( )

A. The beam is prismatic

B. There is no settlement of supports

C. There is no discontinuity such as hinges within the span

D. The spans are equal

54 The number of independent equations to be satisfied for static equilibrium of a plane structure is ( )

A. 1

B. 2

C. 3

D. 6

55 If there are m unknown member forces, r unknown reaction components and j number of joints, then the degree of static indeterminacy of a pin-jointed plane frame is given by ( )

A. m + r + 2j

B. m - r + 2j

C. m + r - 2j

D. m + r - 3j

56 Number of unknown internal forces in each member of a rigid jointed plane frame is ( )

A. 1

B. 2

C. 3

D. 6

57 Degree of static indeterminacy of a rigid jointed plane frame having 15 members, 3 reaction components and 14 joints is ( )

A. 2

B. 6

C. 3

D. 8

58 Degree of kinematic indeterminacy of a pin-jointed plane frame is given by ( )

A. 2j – r

B. j – 2r

C. 3j - r

D. 2j +r

59 Independent displacement components at each joint of a rigid jointed plane frame are ( )

A. Three linear movements

B. Two linear movement and one rotation

C. One linear movement and two rotations

D. Three rotations

60 A pin jointed plane frame is unstable if (where m is number of members, r is reaction components and j is number of joints) ( )

A. (m + r) < 2j

B. (m + r) = 2j

C. (3m + r) = 3j

D. (m + r) > 2j

61 The number of independent equations to be satisfied for static equilibrium in a space structure is ( )

A. 2

B. 3

C. 4

D. 6

62 The degree of static indeterminacy of a rigid jointed space frame is ( )

A. m + r – 2j

B. m + r – 3j

C. 3m + r – 6j

D. 6m + r – 6j

63 If in a rigid jointed space frame, (6m + r) < 6j, then the frame is ( )

A. Unstable

B. Stable and statically determinate

C. Stable and statically indeterminate

D. None of the above

64 While using three moments equation, a fixed beam is replaced by an additional span of ( )

A. Zero length

B. Infinite length

C. Zero moment of inertia

D. None of the above

65 The assumption in the theory of bending of beams is ( )

A. Material is homogeneous

B. Material is isotropic

C. Young's modulus is same in tension as well as in compression

D. All the above

66 The point of contra flexure is the point where ( )

A. BM changes sign

B. BM is maximum

C. BM is minimum

D. SF is zero

67 A truss containing j joints and m members, will be a simple truss if ( )

A. m = 2j - 3

B. j = 2m - 3

C. m = 3j - 2

D. j = 3m – 2

68 The maximum deflection due to a uniformly distributed load w/unit length over entire span of a cantilever of length l and of flexural rigidly EI, is (   )

A. $wl^3/3EI$

B. $wl^4/3EI$

C. $wl^4/8EI$

D. $wl^4/12EI$

69 If ΣH and ΣV are the algebraic sums of the forces resolved horizontally and vertically respectively, and ΣM is the algebraic sum of the moments of forces about any point, for the equilibrium of the body acted upon (   )

A. $\Sigma H = 0$

B. $\Sigma V = 0$

C. $\Sigma M = 0$

D. all the above

70 By applying the static equations i.e. $\Sigma H = 0$, $\Sigma V = 0$ and $\Sigma M = 0$, to a determinate structure, we may determine (   )

A. Support reactions only

B. Shear forces only

C. Bending moment and internal forces only

D. All the above

71 The general expression for the B.M. of a beam of length L is the beam carries,

$M = R_A x - wx^2/2$ (   )

A. A uniformly distributed load w/unit length

B. A load varying linearly from zero at one end to w at the other end

C. An isolated load at mid span

D. None of these

72 A cantilever of length 'L' is subjected to a bending moment 'M' at its free end. If EI is the flexural rigidity of the section, the deflection of the free end, is (   )

A. ML/EI

B. ML/2EI

C. $ML^2/2EI$

D. $ML^2/3EI$

73 The maximum B.M. due to an isolated load in a three hinged parabolic arch, (span l, rise h) having one of its hinges at the crown, occurs on either side of the crown at a distance (   )

A. l/4

B. h/4

C. $l/2\sqrt{3}$

D. $l/3\sqrt{2}$

74 Pick up the correct statement from the following: (   )

A. For a UDL, the SF varies Linearly

B. For a UDL, BM curve is parabola

C. For a load varying linearly, the SF curve is a parabola

D. For a load varying linearly, the BM curve is a cubic parabola

75 A simply supported beam carries a varying load from zero at one end and w at the other end. If the length of the beam is a, the shear force will be zero at a distance x from least loaded point where x i (   )

A. a/2

B. a/3

C. $a/\sqrt{3}$

D. $a\sqrt{3}/2$

76 The maximum deflection due to a load W at the free end of a cantilever of length L and having flexural rigidity EI, is (   )

A. WL/2EI

B. $ML^2/3EI$

C. $ML^3/2EI$

D. $ML^3/3EI$

77 The maximum bending moment for a simply supported beam with a uniformly distributed load w/unit length, is (   )

A. wl/2

B. $wl^2/4$

C. $wl^2/8$

D. $wl^2/12$

78 At any point of a beam, the section modulus may be obtained by dividing the moment of inertia of the section by (   )

A. Depth of the section

B. Depth of the neutral axis

C. Maximum tensile stress at the section

D. Maximum compressive stresses at the section

79 A simply supported beam A carries a point load at its midspan. An other identical beam B carries the same load but uniformly distributed over the entire span. The ratio of the maximum deflections of the beams A and B, will be (   )

A. 2/3

B. 3/2

C. 5/8

D. 8/5

80 The maximum deflection of a simply supported beam of span L, carrying an isolated load at the centre of the span; flexural rigidity being EI, is (   )

A. $WL^3/3EI$

B. $WL^3/8EI$

C. $WL^3/24EI$

D. $WL^3/48EI$

81 The bending moment about the hinge support must be ( )

A. Less than zero

B. Equal to zero

C. Greater than zero

D. Approximately zero

82 The fixed end moment for a fixed beam carrying a central point load W is ( )

A. $WL/8$

B. Wab^2/L^2

C. $WL^2/12$

D. $WL/12$

83 The fixed end moment for a fixed beam carrying a uniformly distributed load w/unit length over the entire span ( )

A. $WL/8$

B. Wab^2/L^2

C. $WL^2/12$

D. $WL/12$

84 The fixed end moment for a uniformly varying load from zero at ends and maximum w at the centre is ( )

A. $11wL^2/192$

B. $5wL^2/96$

C. $wL^2/30$

D. $7wL^2/960$

85 The fixed end moment for a fixed beam carrying a point load W at a distance A from B is ( )

A. WL/8

B. Wab^2/L^2

C. $WL^2/12$

D. WL/12

86 The fixed beam AB has a hinge C at mid span. A concentrated load P is applied at C. What is the fixed end moment M_A ( )

A. PL

B. PL/2

C. PL/4

D. PL/8

87 The supports of a beam is fixed at A and B, if support B settles by Δ, then the fixed end moment is ( )

A. $6EI\Delta/L^2$

B. $3EI\Delta/L^2$

C. $12EI\Delta/L^2$

D. Zero

88 In a fixed beam if support A settles by $\Delta1$ and B settles by $\Delta2$ downward ($\Delta2 > \Delta1$) then fixed end moment will be ( )

A. $6EI(\Delta1 + \Delta2)/L^2$

B. $-6EI(\Delta2 - \Delta1)/L^2$

C. $3EI(\Delta1 + \Delta2)/L^2$

D. $3EI(\Delta2 - \Delta1)/L^2$

89 The bending moment at the fixed end of a cantilever beam is ( )

A. Maximum

B. Minimum

C. WL/2

D. WL

90 The bending moment diagram for a cantilever with point load, at the free end will be ( )

A. A triangle with max. height under free end

B. A triangle with max. height under fixed end

C. A parabolic curve

D. None of these

91 The point of contraflexure occurs in case of ( )

A. Cantilever beams

B. Simply supported beams

C. Over hanging beams

D. All types of beams

92 Bending moment at supports in case of simply supported beam is always ( )

A. Zero

B. Positive

C. Negative

D. Depends upon loading

93 In a cantilever subjected to a combination of concentrated load, uniformly distributed load and uniformly varying load, Maximum bending moment is ( )

A. Where SF = 0

B. At the free end

C. At the fixed end

D. At the mid point

94 A fixed beam of length L carries a point load W at the centre. The deflection at the centre is ( )

A. Same as for a simply supported beam

B. Half of the deflection for a simply supported beam

C. One-fourth of the deflection for a simply supported beam

D. Double the deflection of a simply supported beam

95 A fixed beam of length L carries a point load W at the centre. The number of points of contra-flexure is ( )

A. One

B. Two

C. Three

D. None

96 Props can be used in ( )

A. Simply supported beam

B. Cantilever beam

C. Simply supported as well as cantilever

D. None

97 A continuous beam is one which is ( )

A. Fixed at both ends

B. Fixed at one end and free at the other end

C. Extending beyond the supports

D. Supported on more than two supports

98 How many point of contra flexure can be there in a continuous beam ( )

A. One

B. Two

C. Three

D. None

99 At the point of contra flexure the shear force in the shear force diagram will be ( )

A. Maximum

B. Minimum

C. Zero

D. None

100 The maximum bending moment will occur where ( )

A. Shear force is maximum

B. Shear force is zero

C. Shear force is minimum

D. None of the above

101 If a three hinged parabolic arch, (span l, rise h) is carrying a uniformly distributed load w/unit length over the entire span, ( )

A. Horizontal thrust is wl2/8h

B. SF will be Zero throughout

C. BM will be zero throughout

D. All the above

102 A three hinged arch is generally hinged at its supports and ( )

A. At one quarter span

B. At the crown

C. Anywhere in the rib

D. None of these

103 An isolated load W is acting at a distance a from the left hand support, of a three hinged arch of span 2l and rise h hinged at the crown, the horizontal reaction at the support, is ( )

A. Wa/h

B. Wa/2h

C. 2W/ha

D. 2h/Wa

104 The equation of a parabolic arch of span l and rise h, is given by ( )

A. Y = h x (l-x)/l2

B. Y = 2h x (l-x)/l2

C. Y = 3h x (l-x)/l2

D. Y = 4h x (l-x)/l2

105 The bending moment about the hinge support must be ( )

A. Less than zero

B. Equal to zero

C. Greater than zero

D. Approximately zero

106 For a single point load W moving on a symmetrical three hinged parabolic arch of span L, the maximum sagging moment occurs at a distance x from ends. The value of x is ( )

A. 0.211L

B. 0.25L

C. 0.234L

D. 0.5L

107 Which of these arch is a statically determinate structure ( )

A. Fixed Arch

B. One Hinged Arch

C. Two Hinged Arch

D. Three Hinged Arch

108 In a three hinged arch the horizontal reaction H can be calculated by taking moment at ( )

A. The left hinge

B. The right hinge

C. The hinge at the crown

D. None of the above

109 Depth or height of the arch is the (   )

A. Perpendicular distance between intrados and extrados

B. Vertical distance between springing line and extrados

C. Perpendicular distance between springing line and extrados

D. None of the above

110 The type of arch generally constructed over a wooden lintel or over a flat arch for the purpose of carrying the load of the wall above is (   )

A. Segmental arch

B. Pointed arch

C. Relieving arch

D. Flat arch

111 The vertical distance between the springing line and highest point of the inner curve of an arch is known as (   )

A. Intrados

B. Rise

C. Spandrel

D. Extrados

112 The degree of indeterminacy of a three hinged parabolic arch is (   )

A. One

B. Two

C. Three

D. Zero

113 The Normal Thrust Nx of an arch is obtained using the expression (   )

A. H Cosθ – V sinθ

B. H Cosθ + V Sinθ

C. V Cosθ – H sinθ

D. V Cosθ + H Sinθ

114 The Radial Shear Rx of an arch is obtained using the expression ( )

A. H Cosθ – V sinθ

B. H Cosθ + V Sinθ

C. V Cosθ – H sinθ

D. V Cosθ + H Sinθ

115 Which of the following arch is preferred to carry a uniformly distributed load ( )

A. Parabolic Arch

B. Circular Arch

C. None of the two

D. Both the Arches

116 The effect of arching a beam is ( )

A. To reduce bending moment throughout

B. To increase bending moment throughout

C. To increase shear force

D. To decrease shear force

117 Internal forces at every cross section in a arch are ( )

A. Normal thrust and shear force

B. Shear force and bending moment

C. Normal thrust and bending moment

D. Normal thrust, shear force and bending moment

118 According to Eddy's Theorem, the vertical intercept between the linear arch and the centre line of actual arch at any point represents to some scale ( )

A. Bending moment

B. Shear force

C. Normal thrust

D. Deflection

119 If a three hinged parabolic arch carries a uniformly distributed load over the entire span, then any section of the arch is subjected to ( )

A. Normal thrust only

B. Normal thrust and shear force

C. Normal thrust and bending moment

D. Normal thrust, shear force and bending moment

120 "The bending moment at any section of an arch is equal to the vertical intercept between the linear arch and the centre line of the actual arch" this is ( )

A. Maxwell's Theorem

B. Eddy's Theorem

C. Clapeyron's Theorem

D. Castigliano's first Theorem

121 A three hinged parabolic arch of 20m span and 4m central rise carries a point load of 4kN at 4m from the left hand hinge. The vertical reaction V_A and V_B is ( )

A. $V_A = 0.8$ kN and $V_B = 3.2$ kN

B. $V_A = 2.6$ kN and $V_B = 1.4$ kN

C. $V_A = 3.2$ kN and $V_B = 0.8$ kN

D. $V_A = 1.4$ kN and $V_B = 2.6$ Kn

122 A three hinged parabolic arch of span 30m has its supports at depths of 4m and 16m below crown C. what is the horizontal distance from the supports to the crown C. ( )

A. L1 = 20m and L2 = 10m

B. L1 = 12m and L2 = 18m

C. L1 = 18m and L2 = 12m

D. L1 = 10m and L2 = 20m

123 In a parabolic arch what is the formula to calculate θ (   )

A. $\theta = \tan^{-1}[4Y_C(L-2x)/L^2]$

B. $\theta = \tan^{-1}[4Y_C \times (L-x)/L^2]$

C. $\theta = \tan^{-1}[Y_C \times (L-2x)/L^2]$

D. $\theta = \tan^{-1}[4Y_C \times (L-2x)/L^2]$

124 Which of this an efficient arch (   )

A. One hinged arch

B. Two hinged arch

C. Three hinged arch

D. Fixed arch

125 Why hinges are introduced in arches (   )

A. To make construction work simple

B. To make calculations simple

C. To make arch carry more load

D. To increase the efficiency of an arch

Signature of Faculty   Signature of HoD

Subject: Strength of materials –II   **Branch**: Civil Engineering   **Name**
Of the Faculty: Mr. G.Krishna Rao/ Mrs K.Dhanasri /Mr G.venkatesh

Subjective questions:

PART-A

Instructions:

1. All the questions carry equal marks

2. Solve all the questions

Q.No.	Question	Bloom's Taxonomy Level	CO
1.	a.) Derive the torsion equation. b.) Define closed and open coil Helical Spring?	Applying	1
	OR		
2.	A leaf spring of semi elliptic type has 10 plates. each plate is 10 mm thick and 80 mm broad. The length of the spring is 1.4 m. The material of the plate is steel having a proof stress in bending of 630 MPa. Find the initial radius to which plates should be bent. Also find the height from which a load of 500 N can be dropped so that maximum stress produced is half of the proof stress. E= 208GPa.	Applying	1
3.	a.) Derive the equation for Shear Force , Bending Moment and twisting moment at any point from one support of circular beam loaded uniformly and supported on symmetrically placed columns. b.) A solid steel shaft has to transmit 75kW at 200 r.p.m. Taking the allowable shear stress as 70N/mm^2. Find suitable diameter of shaft , if max. torque is 1.3 times the mean.	Applying	1
	OR		
4.	Determine the diameter of the solid shaft which will transmit 300kW power at 250 r.p.m.. The Max. shear stress should not exceed 30N/mm^2 and twist should not be more than 1^0 in a shaft length of 2.5m. Take modulus of rigidity = 1×10^5N/mm^2.	Applying	1

5.	Derive the equation for maximum Bending Moment and twisting moment of semi-circular beam loaded uniformly and supported on three supports equally spaced.	Analyzing	1
	OR		
6.	Derive equations for deflection and shear stress in closed coiled helical spring with axial load.	Analyzing	1
7.	a) Write the expressions for the maximum shear stress produced in solid and hallow shafts subjected to combined bending and torsion? b) A hallow shaft of internal diameter 10cm is subjected to pure torque and attains a maximum shear stress 'q' on the outer surface of the shaft. If the strain energy stored in the hallow shaft is given by $\frac{\tau^2}{3C} xVolume$ .Determine external diameter of the shaft.	Understand	1
	OR		
8.	a) List the assumptions made in Torsion theory? b) A solid shaft of diameter 80mm is subjected to a twisting moment of 8MN-mm and a bending moment of 5MN-mm at a point. Determine the principal Stresses?	Understand	1

Module II

1.	An ISMB 400x10 structural steel section in supported on a span of 5m and carries a UDL of 40KN/m. It also carries an axial pull of 250KN throughout the length .Determine stresses at a section 2m from one end of the support. For the beam A=7846mm^2 I$_X$ -20458.4x10^{4}mm^4 Z$_x$=1022.9x10^{3}mm^3 and draw the stress distribution diagram.	Applying	2
	OR		

2.	What is the core of section . Derive the equations for limit of eccentricity for
	
	      a) rectangular section
	      b) hollow rectangular section
	      c) circular section
	      d) hollow circular section
		Analyzing	2

3.	A column of rectangular in c/s of 300x400mm in dimensions. The column carries an eccentric point load of 360KN on one diagonal at a distance of quarter diagonal length from a corner. Calculate the stresses at all four corners .Draw stress	Applying	2

	distribution diagrams for any adjacent sides.		
	OR		

4.	A Trapezoidal masonry dam is of 20m height .The dam is having water up to a depth of 16m on its vertical side .The top and bottom width of the dam are 3m and 9m respectively. The density of masonry is given as $2000KG/m^2$. Determine
	
	   a) The resultant force on the dam.
	   b) The point where the resultant cuts the base.
	   c) The max. and min. stress intensities at the base.
		Applying	2

5.	Explain the stability condition of a dam.	Understand	2
	OR		
6.	a) Define the terms (i) Dams (ii) Retaining Walls. b) What is angle of repose? c) What are the assumptions made in Rankine's Theory of earth pressure?	Understand	2
7.	A masonry retaining wall of trapezoidal section is 8m high and retains earth which is level up to the top. The width at the top is 1.5m and exposed face in vertical. Find the min. width of wall at the bottom in order the tension may not be induced at the base. Masonry and earth has densities $2300Kg/m^3$ and $1600Kg/m^3$ respectively. The angle of repose of soil is 30^0 .	Applying	2
	OR		
8.	a) List the total stresses across the section of a rectangular dam? b) Calculate the wind force acting on the surface of chimney of height 20m with external diameter 4m and internal diameter 2m. The chimney is subjected to a horizontal wind pressure of intensity $1kN/m^2$. The specific weight of material of chimney is $22kN/m^3$.	Applying	2
Module III			
1.	A closed cylindrical vessel made of steel plates 4mm thick with plane ends, carries a fluid under pressure if $3N/mm^2$. The diameter of cylinder is 25cm and length 75cm Calculate longitudinal and hoop stresses in the cylindrical wall and determine change in diameter ,length ,volume .$E=2.1x10^5 N/mm^2$.$\mu=0.286$.	Applying	3
	OR		
2.	A boiler is subjected to an internal steam pressure of $2N/m^{m2}$. The thickness of boiler plate is 2.0cm and permissible tensile stress is $120N/m^{m2}$ .find the maximum diameter when efficiency of longitudinal joint is 90% and that of circumferential joint is 40%.	Applying	3
3.	Derive the equation for Change in dia. and Change in length in thin cylindrical shell subjected to internal pressure.	Analyzing	3
	OR		
4.	a)	Analyzin	3

	erive the equation for Max. Shear stress in thin cylinders.	g	
b)	rite the equation for Hoop strain, longitudinal strain and volumetric strain.		

Signature of the Faculty　　　　　　　　　　　　　**Signature of the HoD**

Subject: Strength of materials –II   **Branch**: Civil Engineering   **Name**

Of the Faculty: Mr. G.Krishna Rao/ Mrs K.Dhanasri /Mr G.venkatesh

OBJECTIVE QUESTIONS

1	The theory of curved beam postulated by	
	Rankine	
	Mohr	
	Castigliano	
	Winkler-Bach	
2	In curved beam the distribution of bending stress is	
	Linear	
	Parabolic	
	Uniform	
	Hyperbolic	
3	The neutral axis in curved beams	
	lies at the top of the beam	
	lies at the bottom of the beam	
	does not coincide with geometric axis	
	coincide with geometric axis	
4	For a crank hook the most suitable section is	
	triangular	
	trapezoidal	
	circular	
	rectangular	
5	The nature of stress at the inside surface of a crane hook	
	shear	
	tensile	
	compressive	
	none of the above	
6	Which of the following statement is correct with reference to the curved beam theory	
	shear stress is zero	
	hoop stress is zero	
	radial stress is zero	
	bending stress is zero	
7	When the load pass through the bending axis of a beam then there shall be	
	pure bending of the beam	
	twisting of the beam	
	bending shall be accompanied by twisting	
	non-bending of beam	
8	Which of the following statements is/are true	
	The bending stress distribution in bending of straight beams is nonlinear	
	The bending stress distribution in bending of curved beams is hyperbolic	

	The neutral axis coincides with geometrical axis during bending of curved beams	
	All of the above	
9	What is the shape of distribution of bending stress in curved beams?	
	Hyperbolic	
	Rectangular	
	Square	
	Rhombus	
10	The shafts are made of	
	Mild steel	
	Alloy steel	
	Copper alloys	
	Any of the above	
11	The shafts are designed on the basics of	
	Strength	
	Rigidity	
	Either of the above	
	Both (a) & (b)	
12	In shafts with keyways the allowable stresses are usually of the value given	
	25 percent	
	50 percent	
	75 percent	
	95 percent	
13	The angle of twist is -----proportional to the twisting moment	
	Directly	
	Inversely	
	either (a) or (b)	
	None of the above	
14	For the same material, length and given torque a hollow shaft weighs---a solid shaft	
	Less than	
	More than	
	Equal to	
	None of the above	
15	The strength of a hollow shaft for the same length, material and weight is—a solid shaft.	
	Less than	
	More than	
	Equal to	
	None of the above	
16	If a close-coiled helical spring is subjected to load W and the deflection produced is d, the stiffness of the spring is given by	
	W/d	
	W.d	
	d/W	
	W2.d	
17	The energy stored in a close-coiled helical spring when subjected to an axial twist is given by	
	$\sigma 2/6E$ X Volume of spring	
	$\sigma 2/8E$ X Volume of spring	
	$\sigma 2/4E$ X Volume of spring	
	$\sigma 2/2E$ X Volume of spring	
18	Two springs of stiffness k1 and k2 respectively are connected in series, the stiffness of the composite spring (k) will be given by	
9	K=k1+k2	

	K=k1xk2	
	K=k1k2/ k1+k2	
	K= k1+k2/k1k2	
19	The resilience of a flat spiral spring is given by	
	σ max /24E	
	σ 2max /24E	
	σ 2max /12E	
	σ 2max /8E	
20	In case of a laminated spring, the load at which the plates become straight is called	
	Working load	
	Safe load	
	Proof load	
	None of the above	
21	-------------are called cantilever laminated springs	
	Semi-elliptical springs	
	Quarter elliptical springs	
	Both (a) & (b)	
	None of the above	
22	Nature of stress set up in a shaft due to torsion is	
	Tensile	
	Compression	
	Crushing	
	Shear	
23	A shaft is said to be in pure tension, if the shaft is subjected to	
	Twisting only	
	Bending and twisting	
	Bending, twisting and axial thrust	
	None of the above	
24	Polar M.O.I of the circular shaft section is determined by the	
	Theorem of parallel axes	
	Theorem of perpendicular axes	
	Lame's theorem	
	None of the above	
25	Polar M.O.I of a solid circular section is	
	Πr4/2	
	Πr4/32	
	Πr4/64	
	Πr4/24	
26	Torsion equation is	
	M/I = f/y = E/R	
	T/J = f/R = Gθ/l	
	T/J = R/f = θ/lG	
	None of the above	
27	Maximum torque transmitted by a shaft is greater than the average torque usually by	
	40 to 50 %	
	10 to 25 %	
	25 to 40 %	
	None of the above	
28	A shaft is to be designed on the basis of	
	Maximum allowable shear stress	
	Maximum allowable angle of twist	
	Both (a) & (b)	

	None of the above		
29	Torsional rigidity of a shaft is		
	GD		
	Gθ		
	GJ		
	GT		
30	Torsion bars are used in		
	Steam engine		
	Steam turbine		
	Gas turbine		
	Automobiles		
31	Two shafts made of the same material have the same length and are joined in series. If the ratio of their diameters is 2, then the ratio of their angles of twist is		
	8		
	16		
	4		
	2		
32	Two shafts made of the same material have the same length and are joined in series. If the ratio of their diameters is 2, then the ratio of shear stresses is		
	8		
	16		
	4		
	2		
33	Shaft coupling is used to transmit		
	Axial thrust from one shaft to another		
	Torque from one shaft to another co-axial shaft		
	Power of one shaft to another co-axial shaft		
	Both (b) & (c)		
34	In shaft coupling, bolts used are subjected to		
	Only shear stress		
	Only crushing stress		
	Both (a) & (b)		
	None of the above		
35	Spring is used to		
	Absorb shock		
	Accelerate speed of an automobile		
	Both (a) & (b)		
	None of the above		
36	Spring constant is the		
	Load required to deflect the spring through unit length		
	Ratio of mean coil radius to the radius of the wire with which the spring is made		
	Solid length of the spring		
	None of the above		
37	If a coiled spring is cut into two halves, stiffness of the spring will be		
	Half		
	Double		
	The same as before		
	None of the above		
38	If a coiled spring is cut into two halves, deflection of the spring will be		
	Half		
	Double		
	The same as before		

	Quadruple	
39	Helix angle for a spring is usually	
	45 º- 60 º	
	60 º- 75 º	
	10 º- 15 º	
	0 º- 10 º	
40	In a close coiled helical spring nature of stress setup is	
	Bending stress	
	Tensile stress	
	Shear stress	
	Compressive stress	
41	If R= Mean radius and N= number of coils, then length of a close coiled helical spring is	
	$2\pi r$	
	$2\pi Rn$	
	$2\pi rn$	
	None of the above	
42	Three coiled springs are connected in series K1, K2 and K3 are the stiffness's of the springs and K is the equivalent stiffness of the springs. then	
	K= K1 + K2 + K3	
	1/K= K1 + K2 + K3	
	1/K= 1/K1 + 1/K2 + 1/K3	
	None of the above	
43	Three coiled springs are connected in series K1, K2 and K3 joined in parallel. K is their equivalent stiffness. Then,	
	K= K1 + K2 + K3	
	1/K= K1 + K2 + K3	
	1/K= 1/K1 + 1/K2 + 1/K3	
	None of the above	
44	Equivalent stiffness of coiled springs is	
	Sum of the stiffnesses of the given springs	
	Sum of the reciprocals of the stiffnesses of the given springs	
	The stiffness of a single spring which will produce under the given load the same deflection as that produced by the given springs together	
	None of the above	
45	In open coiled helical spring	
	Only shear stress is set up	
	Only bending stress is set up	
	Both shearing and bending stress is set up	
	Only tensile stress is set up	
46	For a cantilever loaded with U.D.L over some part of its length from fixed end, maximum deflection will occurs at the	
	Fixed end	
	The point where U.D.L terminates	
	Free end	
	Middle of the cantilever	
47	For a cantilever loaded with a point load at the free end, the maximum deflection will be	
	Wl2/2EI	
	Wl3/2EI	
	2Wl3/EI	
	Wl3/3EI	
48	For a cantilever loaded with a point load at the free end, the maximum slope will be	
	Wl2/2EI	

	Wl3/2EI	
	2Wl3/EI	
	Wl3/3EI	
49	For a cantilever loaded with U.D.L over its entire length the maximum deflection will be	
	Wl3/6EI	
	Wl3/8EI	
	Wl3/16EI	
	Wl3/24EI	
50	Slope at any section of the actual beam is B.M at the corresponding section of the actual beam	
	Yes	
	No	
	None	
	None	
51	An eccentric load W with eccentricity 'e' is	
	An axial load of W	
	A moment equal to W*e	
	Both a and b	
	None of the above	
52	_____loading includes direct and bending stress at the section	
	Uniformly distributed load	
	Eccentric	
	Either of the above	
	None of the above	
53	The distance of point where resultant (R) cuts the base from line of action of self weight(W) of dam	
	F/W X h/3	
	F/h X W/3	
	F/W + h/3	
	None of the above	
54	Section modulus of the hollow circular section	
	$Z = \frac{\pi D}{32}(D^4\text{-}d^4)$	
	$Z = \frac{\pi D}{16}(D^4\text{-}d^4)$	
	$Z = \frac{\pi}{16D}(D^4\text{-}d^4)$	
	$Z = \frac{\pi}{32D}(D^4\text{-}d^4)$	
55	For no tension in the Rectangular section the eccentricity must not exceed	
	b/6	
	b/8	
	b/12	
	None of the above	
56	The limits of eccentricity for circular section	
	E less than or equal to d/2	
	E less than or equal to d/4	
	E less than or equal to d/6	
	E less than or equal to d/8	
57	The limits of eccentricity for rectangular section	
	E less than or equal to d/2	
	E less than or equal to d/4	
	E less than or equal to d/6	
	E less than or equal to d/8	
58	The diameter of the kernel circular section is	

	d/2	
	d/3	
	d/4	
	$d/\sqrt{2}$	
59	The diameter of the kernel of a hollow circular section is	
	D+d/2	
	D^2+d^2/D	
	$D^2+d^2/2D$	
	$D^2+d^2/4D$	
60	What is the maximum and minimum intensities when column is subjected to eccentric load	
	$\sigma_{max}=\sigma_d+\sigma_b$; $\sigma_{min}=\sigma_b-\sigma_d$	
	$\sigma_{max}=\sigma_d+\sigma_b$; $\sigma_{min}=\sigma_b X;\sigma_d$	
	$\sigma_{max}=$ Both(a) and (b)	
	$\sigma_{max}=\sigma_d+\sigma_b$; $\sigma_{min}=\sigma_d-\sigma_b$	
61	In a rectangular section the stress will be same sign throughout the section .if the load lies within the _____of section.	
	Middle third	
	Middle half	
	Either of the above	
	None of the above	
62	The total horizontal wind force = coefficient of wind resistance x horizontal intensity of the wind pressure x_____	
	Cross-sectional area	
	Projected area	
	Either of the above	
	None of the above	
63	The brick chimney is stable if the resultant thrust lies within the middle	
	Third	
	Half	
	Both a and b	
	None of the above	
64	In axial load column the value of 'e' is	
	e=e	
	e=1/e	
	e=0	
	None of the above	
65	When a load is acting within the limit of ''e'' then the minimum will be	
	Tensile	
	Compressive	
	Shear	
	None of the above	
66	When a load is acting beyond limit of 'e' then minimum will be	
	Tensile	
	Compressive	
	Shear	
	All of the above	
67	The water pressure at the base of dam height(H), depth of water(h), density of water(w) is	
	w/h	
	wh	
	W+h	
	None of the above	

68	The formula for coefficient of active earth pressure(Ka) is	
	1+sinφ/1-sinφ	
	1-sinφ/1+sinφ	
	1+sinφ/1xsinφ	
	None of the above	
69	The slenderness ratio of the vertical column of the square section of 2.5cm sides and 300cm length is	
	200	
	240	
	360	
	416	
70	The range within which a load can be applied on a rectangular to avoid any tensile stress is	
	One –half of the base	
	One –fifth of the base	
	One fourth of the radius	
	One sixth of base on either sides of the centroid	
71	The region of the cross section of a column in which compressive load may be applied without producing any tensile stress is known as core of the cross section .in circular section columns the radius of core is	
	One –half of the radius	
	One –third of the radius	
	One- quarter of the radius	
	One-fifth of the radius	
72	The radius of gyration of a rectangular section is not proportional to	
	Square root of the moment of inertia	
	Square root of the inverse of area	
	Square root of the moment of inertia divided by area of section	
	None of these	
73	A reinforced concrete column is assumed to be made up of	
	Homogeneous material	
	Heterogeneous material	
	Isotropic material	
	None of these	
74	The value of the poisons ratio is always remains	
	Greater than one	
	Less than one	
	Equal to one	
	None of these	
75	The slenderness ratio of a vertical column of square cross section of 10 cm side and 50cm long is	
	117.2	
	17.32	
	173.2	
76	A column is said to be of medium size if its slenderness ratio is between	
	20 and32	
	32 and120	
	120 and 160	
	160 and 180	
77	A vertical column has two moment of inertia (i.e.I_{xx} and I_{yy}). The column will tend to buckle in the direction of the	
	Axis of load	
	Perpendicular to axis of load	

	Maximum moment of inertia	
	Minimum moment of inertia	
78	The neutral axis of the cross section of a beam is that axis at which the bending stress is	
	Zero	
	Minimum	
	Maximum	
	Infinity	
79	Euler's formula holds good only for	
	Short column	
	Long column	
	Both	
	Weak column	
80	When a rectangular beam is loaded transversely the maximum compressive stress is developed	
	Top layer	
	Bottom layer	
	Neutral axis	
	Every cross section	
81	The bending stress in a beam is _____ bending moment	
	Equal to	
	Less than	
	More than	
	Directly proportional	
82	The Rankin's formula holds good for	
	Short column	
	Long column	
	Both	
	Weak column	
83	In case of eccentricity loaded struts _____ is preffered	
	Solid section	
	Hollow section	
	Composite section	
84	The load at which the column just buckle is known as	
	Buckling load	
	Critical load	
	Crippling load	
	Any of the above	
85	Condition to prevent overturning of dam	
	Resisting moment > overturning moment	
	Overturning moment > resisting moment	
	Both	
	None of the above	
86	Factor of safety is the ratio of	
	Ultimate stress to working stress	
	Working stress to ultimate stress	
	Breaking stress to ultimate stress	
	Ultimate stress to breaking stress	
87	The compressive strength of the brittle material is _____ its tensile strength	
	Equal to	
	Less than	
	Greater than	
	None of the above	

88	The bending stress equation is	
	$M/I = f/y = E/R$	
	$M/I = f/y = E/R$	
	$M/I = f/R = R/E$	
	$M/I = y/f = E/R$	
89	The section modulus of a rectangular section is about an axis through its CG is	
	$b/2$	
	$d/2$	
	$bd^2/2$	
	$bd^2/6$	
90	Condition to avoid tension in the masonry of dam at its base	
	e is greater than or equal to b/6	
	e is less than or equal to b/6	
	Both	
	None of the above	
91	When a column is subjected to a n eccentric load the stress induced in column will be	
	Direct stress only	
	Bending stress only	
	Shear stress only	
	Direct and bending stress both	
92	A column that fails due to direct stress is called	
	Short column	
	Long column	
	Weak column	
	Medium column	
93	If the section modulus of the beam increased the bending stress in the beam will be _____	
	Not changed	
	Increased	
	Decreased	
	None of the above	
94	For long column the value of the buckling load is _____crushing load	
	Equal to	
	Less than	
	More than	
	None of these	
95	The breaking stress is _____the ultimate stress	
	Equal to	
	Less than	
	Greater than	
	None of these	
96	Condition to prevent the sliding of the dam where F=horizontal force, w=self weight of dam,μ =coefficient of friction	
	$F > \mu w$	
	$F < \mu w$	
	$F = \mu w$	
	Both B and C	
97	The range with in which the load can be applied so as not to produce any tensile stress is known as	
	Core of section	
	Kernel of setion	
	Both	

	None of the above	
98	The stress at the boundary of the kern is	
	Zero	
	Maximum	
	Minimum	
	None of the above	
99	For a cylindrical chimney of hollow circular section subjected to wind pressure . the coefficient of wind resistance for calculating the total wind force on the chimney is generally taken as	
	0.3 to 0.5	
	0.45 to 0.6	
	0.60 to 0.75	
100	Max eccentricity of solid circular section dia.(d) to avoid tension is	
	d/8	
	d/3	
	d/6	
	d/4	
101	The hoop stress in a thin cylinder of mean diameter 'd' and wall thickness 't' under the pressure p is given by	
	Pd/2t	
	Pd/8t	
	Pd/4t	
	Pd/10t	
102	The longitudinal stress in a thin cylinder of diameter d and wall thickness t and due to internal pressure p is	
	Pd/2t	
	Pd/4t	
	Pd/6t	
	Pd/8t	
103	A cylinder vessel is said to be thin cylinder if the ratio of its internal diameter to its wall thickness is less than	
	10	
	15	
	20	
	30	
104	The volumetric strain in thin spherical pressure vessel is	
	σ_n/E $(5-2\mu)$	
	$\sigma_n/3E$ $(1-2\mu)$	
	σ_n/E $(1-\mu)$	
	$3\sigma_n/E$ $(1-\mu)$	
105	The volumetric strain in the thin cylindrical pressure vessel is	
	σ_n/E $(5-2\mu)$	
	σ_n/E $(5-\mu)$	
	σ_n/E $(2.5-\mu)$	
	σ_n/E $(2.5-2\mu)$	
106	Spherical vessels are preferable over cylindrical shapes ,because	
	They are pleasant in appearance	
	They are east to fabricate	
	Hoop stress in them is lower in value	
	They contain high volume	

107	The radial stress in a thin spherical vessel is	
	Zero	
	Half the hoop stress	
	Double the hoop stress	
	Equal to hoop stress	
108	Volumetric strain in thin cylindrical shell is	
	Longitudinal strain + circumferential strain	
	Longitudinal strain + 2(circumferential strain)	
	2(longitudinal strain)+ circumferential strain	
	2(longitudinal strain) + (circumferential strain)	
109	If a thin cylinder is wound with a wire under tension the hoop(circumferential)stress is	
	Tensile stress	
	Compressive stress	
	Shear stress	
	Zero	
110	The maximum shear stress in thin cylindrical pressure vessel is given by	
	Pd/2t	
	Pd/4t	
	Pd/10t	
	Pd/8t	
111	The ratio of circumferential stress to longitudinal stress in a thin cylinder subjected to internal hydrostatic pressure	
	½	
	1	
	2	
	4	
112	Thin cylindrical shell of diameter 100mm ,wall thickness 2.5mm, is subjected to an internal fluid pressure of 1.5N/mm^2. The maximum stress developed in cylinder is wall is	
	15N/mm^2	
	30N/mm^2	
	60N/mm^2	
	120N/mm^2	
113	A thin cylindrical shell of diameter D wall thickness t is subjected to an internal fluid pressure p ,if E is the young's modulus and V is the poison's ratio for the material of cylinder .The expression for volumetric strain of cylinder is	
	$\frac{PD}{4tE}(5-4V)$	
	$\frac{PD}{4tE}(4-5V)$	
	$\frac{PD}{2tE}(5-4V)$	
	$\frac{PD}{2tE}(4-5V)$	
114	A thin spherical shell of diameter 200mm .wall thickness 5mm is subjected to an internal fluid pressure p .If the maximum allowable stress in the shell is not exceed 120N/mm^2. The magnitude of p is	
	3N/mm^2	
	6N/mm^2	
	12N/mm^2	
	24N/mm^2	
115	A thin spherical shell of diameter D wall thickness t is subjected to an internal fluid pressure p.if is the young's modulus Vis the poissions ratio. For material of the shell the expression for	

	the change in diameter is	
	$\dfrac{PD2}{4tE}(1-2V)$	
	$\dfrac{PD2}{4tE}(2-V)$	
	$\dfrac{PD}{4tE}(1-V)$	
	None of these	
116	The longitudinal stress in a thin cylinder of diameter d and wall thickness t due to internal pressure p and efficiency of hoop joint η_c	
	Pd/4t η_c	
	Pd/2t η_c	
	Pd/8t η_c	
	None	
117	The hoop stress in a thin cylinder of diameter d and wall thickness t due to internal pressure p and efficiency of longitudinal joint η_l	
	Pd/4t η_l	
	Pd/2t η_l	
	Pd/8t η_l	
	none	
118	A steam boiler of 150cm internal diameter is subjected to an internal pressure of $2N/mm^2$ if the efficiency of the longitudinal riveted joint is 80% .the maximum tensile stress in the plate section is not to exceed $125N/mm^2$ the thickness of plate will be	
	6.0mm	
	3.0mm	
	1.5mm	
	6.75mm	
119	A cylindrical tank 1m inside diameter and 20m high is filled with water of specific weight $100n/mm^2$. If the thickness of the tank is 2.5cm. the maximum stress developed in the wall of tank is	
	$4N/mm^2$	
	$2N/mm^2$	
	$1N/mm^2$	
	$5N/mm^2$	
120	A thin cylindrical shell of volume $2000cm^3$ is filled with oil of atmosphere pressure. The additional 1cc of oil is pumped inside the cylinder to produce an internal pressure of $1N/mm^2$. If the effect of the expansion of cylinder is neglected. The modulus of compressibility of oil is	
	$20N/mm^2$	
	$200N/mm^2$	
	$2N/mm^2$	
	$20KN/mm^2$	
121	A closed pressure of vessel of length 40cm.wall thickness 5mm internal diameter 10cm is subjected to an internal pressure of $8N/mm^2$. The normal stress is an element of cylinder on a plane at 30^0 to the longitudinal axis will be	
	$140N/mm^2$	
	$70N/mm^2$	
	$35N/mm^2$	
	None of these	
122	Chemical vessels are made up of which of the following material	
	Non-ferrous material	
	Sheet metal	
	Cast iron	

	Special material	
123	Vessels used for fluid under pressure are called	
	Cylinders	
	Spheres	
	Shells	
	None of the above	
124	Pressure vessels are made of	
	Non-ferrous material	
	Sheet steel	
	Cast iron	
	Any of the above	
125	When a thin cylindrical steel is subjected to internal fluid pressure. Which of the following stresses is developed in its wall	
	Circumferential stress	
	Longitudinal stress	
	Both a and b	
	None of the above	

Signature of Faculty   Signature of HOD

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

II B.Tech– II SEM (MR 18-19 REGULATION)

I Mid Examination Subjective Question Bank

Subject	:	**WATER RESOURCES ENGINEERING**
Branch /Specialization	:	**Civil Engineering**
Name of the faculty	:	**B.Dhanalaxmi /K.Vamsi krishna**

Module I

Q.No.	Question	Bloom's Taxonomy Level	CO
1.	Discuss about Evapo transpiration. what are the factors affecting Evapo transpiration.	**Applying**	1
	OR		
2.	Distinguish between Hyetograph and Hydrograph.	**Applying**	1
3.	Given below are the ordinates of 6hr flood hydrograph. Separate the base flow and compute the ordinates of unit hydrograph. assuming that base flow is $3m^3/s$ <table><tr><td>Time(hr)</td><td>0</td><td>6</td><td>12</td><td>18</td><td>24</td><td>30</td><td>36</td><td>42</td><td>48</td><td>54</td></tr><tr><td>Discharge (cumecs)</td><td>3.0</td><td>50.0</td><td>120.0</td><td>85.0</td><td>65.0</td><td>45.0</td><td>30.0</td><td>20.0</td><td>15.0</td><td>3.0</td></tr></table>	**Analyzing**	1
	OR		
4.	The isohyets drawn for a storm which occurred over a drainage basin of area 950 km^2 yielded the following information. determine the average depth of rainfall over the basin. <table><tr><td>Isohyet interval in mm</td><td>85-75</td><td>75-65</td><td>65-55</td><td>55-45</td><td>45-35</td></tr><tr><td>Area between isohyets in km^2</td><td>125</td><td>236</td><td>264</td><td>175</td><td>150</td></tr></table>	**Analyzing**	1
5.	What are the different methods for the measurement of precipitation? Describe Tipping bucket method with ne at sketch	**Understanding**	1
	OR		

6.	Explain in Detail about missing rainfall methods.	**Understanding**	1
7	Explain hydrological cycle with a neat sketch	**Understanding**	1
	OR		
8	Define Runoff? List out the various factors affecting Runoff.	**Understanding**	1

Module II

1.	Explain ground water movement by Darcy's law? In detail	**Understanding**	2
	OR		
2.	Explain any one method from pumping test and recovery test method for determination of well yield.	**Understanding**	2
3.	Write an account of sub surface distribution of water	**Applying**	2
	OR		
4.	Write a short note on (i) Permeability (ii) Transmissibility (iii) Specific retention (iv)Specific yield	**Applying**	2
5.	Derive an expression for the steady state discharge of well fully penetrating in an confined aquifer by explaining all the terms with diagram	**Analyzing**	2
	OR		
6.	A tube well of 300mm diameter penetrates fully a confined aquifer. The length of the strainer is 25m. calculate the yield from the well under a drawdown of 4m. the coefficient of permeability of aquifer = 50m/day. Assume radius of circle of influence equal to 200m.	**Analyzing**	2
7.	Explain the terms well losses,specific capacity, specific draw down,well deficiency.	**Understanding**	2
	OR		
8.	Define the terms (i) Aquifer (ii) Aquiclude (iii) Aquifuge (iv) Aquitard	**Understanding**	2

Module III

1.	Classify the types of irrigation in a flow chart and write in detail.	**Analyzing**	3

	OR		
2.	Explain about surface Irrigation methods in detail with a neat sketch.	**Analyzing**	3
3.	Write a note on sprinkle method of irrigation	**Understanding**	3
	OR		
4.	Define Irrigation. Explain the advantages and ill effects of irrigation.	**Understanding**	3

Signature of the Faculty   **Signature of the HoD**

MALLAREDDY ENGINEERING COLLEGE (AUTONOMOUS)

II B.TECH II SEM (MR18 REGULATION)
1ST MID EXAM OBJECTIVE QUESTIONS

Subject: Water Resources Engineering

Branch: Civil Engineering   Faculty: B.Dhanalaxmi/K.Vamsi Krishna

1   In India the recording type rain gauge generally used, is   [   ]
    a.   weighing type

    b.   tipping type

    c.   float
        recording type
    d.   none of these

2   In India, rain fall is generally recorded at   [   ]
    a.   8 A.M.
    b.   12 Noon
    c.   4 P.M.
    d.   8 P.M.

3   Precipitation caused by lifting of an air mass due to the pressure difference, is called [   ]
    a.   cyclonic
        precipitation
    b.   convective
    precipitation
    c.   orographic
    precipitation
    d.   none of these.

4   For determination of average annual precipitation in a catchment basin, the best method is
[   ]
    a.   Arithmetical
    method
    b.   Thiessen's
    mean method
    c.   Isohyetal
    method
    d.   None of
    these.

5   RainFall simulators are used for the determination of   [   ]
    a.   evaporation

    b.   precipitation

c.   run off
d.   infiltration
        capacity

6   Symon's rain gauge is   [   ]
    a. tipping-bucket gauge
    b. weighing type gauge
    c. float recording gauge
    d. non-recording gauge.

7   Isohytes are the imaginary lines joining the points of equal   [   ]
    a. pressure
    b. height
    c. humidity
    d. rainfall.

8   Phytometer is generally used for the measurement of   [   ]
    a. interception
    b. evaporation
    c. transpiration
    d. none of these.

9   Pressure exerted by fully saturated air, is known   [   ]
    a. partial pressure
    b. vapour pressure
    c. saturation vapour pressure
    d. None of these.

10   Precipitation caused due to striking of air masses with Mountains, is called   [   ]
    a. orographic precipitation
    b. convective precipitation
    c. cyclonic precipitation
    d. none of these

11   The science which deals with occurrence , movement and circulation of water is called [   ]
    a. hydrogeology
    b. geohydrology
    c. hydrology
    d. hydrography

12   The instrument used to measure the wind velocity in the atmosphere is   [   ]
    a. currentmeter
    b. atmometer
    c. pyranometer
    d. anemometer

13   Rain shadow region is formed on the   [   ]
    a. windward side of mountain when rain yielding mass passes over it
    b. leeward side of mountain when rain yielding air mass passes over it
    c. plains when rain yielding air mass passes over it
    d. none of the above

14   The convictive precipitation is caused when   [   ]
    a. vertical instability of moist air is produced by surface heating
    b. the distribution on the air front develops into cyclone
    c. the colder air raises into warm air
    d. all of the above

15   Rainfall hyetograph shows the variation of   [   ]
    a. cumulative rainfall with time

b. rainfall intensity with time
c. Rainfall depth over an area
d. Rainfall intensity with the cumulative rainfall

16   Rainfall mass curve shows the variation of   [   ]
a. rainfall intensity with time
b. Rainfall intensity with the cumulative rainfall
c. Rainfall excess with time
d. cumulative rainfall with time

17 In selecting a site for a rain gauge the nearest object should be at a minimum distance of [   ]
a. Twice its height
b. Thrice its height
c. Equal to its height
d. Anywhere

18   Double mass curve technique is used   [   ]
a. To prepare rainfall hyetograph from rainfall masscurve
b. To check the consistency of record at a suspected rain gauge station
c. To derive the hydrograph
d. To derive the s-curve hydrograph

19   The chart removed from a recording type rain gauge gives   [   ]
a. The rainfall mass curve
b. Rainfall hyetograph
c. The isohyetal map
d. Double mass curve

20   As per Indian standards how many rain gauges should be installed in catchment with an area of 1000km2 lying in planes?   [   ]
a. 6
b. 4
c. 2
d. 8

21   Intensity of rainfall means   [   ]
a. Total rainfall during a storm
b. Rainfall per unit area
c. Rate at which the rainfall depth is accumulating
d. Volume of Rainwater per unit area

22   snow fall is generally measured in terms of   [   ]
a. Weight of snow per unit area
b. Equivalent depth of water
c. Depth of snow fallen
d. any of the above

23   Thiessen polygon method is used   [   ]
a. To determine the parameters of aquifer
b. To locate the depth of water table
c. To compute the average depth of rainfall
d. to drive the ordinates of unit hydrograph

24   In the two point method of finding the average velocity using the current water across a vertical in a open channel, the velocities are measured below the free surface at   [   ]
a. 0.25 & 0.75 depths
b. 0.20 & 0.80 depths
c. 0.4 & 0.6 depths
d. 0.15 & 0.85 depths

25   In the Single point method of finding the average velocity using the current water across a vertical in a open channel, the velocities are measured below the free surface at   [   ]
   a. 0.8 depth
   b. 0.7 depth
   c. 0.6 depth
   d. 0.5 depth

26   The stage in the river is defined as   [   ]
   a. The elevation of water surface with reference to an arbitrary datum
   b. The average depth of flow in the stream
   c. The radius of a semicircle whose area equal to the area of flow
   d. None of the above

27   A hydrograph is the graph drawn between   [   ]
   a. Discharge in the river and the stage in the river
   b. Discharge and time
   c. Stage and time
   d. None of the above

28   The concept of unit hydrograph was 1st introduced by   [   ]
   a. Dalton
   b. Sherman
   c. Darcy
   d. Gumbell

29   The word unit in the unit hydrograph means   [   ]
   a. The unit depth of runoff
   b. Unit duration of the storm
   c. Unit base period of the hydrograph
   d. arbitrary

30   Direct runoff is the sum of   [   ]
   a. The surface runoff and the base flow
   b. The baseflow and the ground water runoff
   c. The delayed subsurface runoff and deep percolation
   d. The surface runoff and the rapid subsurface runoff

31   The s-curve hydrograph is   [   ]
   a. The summation of the unit hydrograph
   b. The summation of the total runoff hydrograph
   c. The summation of the rainfall hyetograph
   d. None of these

32   The s-curve hydrograph is   [   ]
   a. To estimate the peak flood from a basin due to a given storm
   b. To convert the unit hydrograph of given duration into a unit hydrograph of any other duration

   c. To develop synthetic unit hydrograph
   d. To estimate the infiltration losses

33   The lag time of the basin is   [   ]
   a. The time between the centroid of rainfall diagram and the peak ordinate of the hydrograph
   b. The time between the beginning and ending of direct runoff
   c. The time between the beginning and ending of effective rainfall
   d. The time taken for the remotest particle to reach the basin outlet

34 hydrograph method is generally used to estimate the peak flood when the catchment
   area   does not exceed   [   ]
   a. 1000 km2

b. 1500 km2

c. 5000 km2

d. 10000 km2

35 For non-uniform rainfall W-index will be always   [   ]

a. equal to Ø-index

b. more than Ø-index

c. less than Ø-index

d. difficult to tell

36   For uniform rainfall W-index will be always   [   ]

a. equal to Ø-index

b. more than Ø-index

c. less than Ø-index

d. difficult to tell

37   The chemical compound which is generally used to reduce the evaporation for water bodies is

[   ]

a. D.D.T

b. alum

c. cetyl alcohol

d. potassium dichromate

38   Lysimeter is the instrument used to measure   [   ]

a. evaporation

b. transpiration

c. infiltration

d. evapotranspiration

39   The evaporation through plants and from the surrounding soil together is called   [   ]

a. Hydration

b. vapourisation

c. transpiration

d. evapotranspiration

40   The California formula for return period is   [   ]

a. T=n/m

b. T=2n/2m-1

c. T=n+1/m

d. T=n/m-1

41   The ryve's formula for maximum flood from a catchment of area A is given by   [   ]

a. Q=CA^2/3

b. Q=CA^3/4

c. Q=CA^4/5

d. Q=CA^1/3

42   The theory of infiltration was enunciated by   [   ]

a. Sherman

b. Dalton

c. Darcy

d. Horton

43   The type of recording rain gauge used in India   [   ]

a. weighing type

b. float type

c. tipping-bucket type

d. none of the above

44   I.M.D stands for   [   ]

a. Indian Mining Department

b. Indian Mineral Deposits

c. Indian Meteorological Department

d. International Monetary Debt

45   The strange's table gives the relationship between   [   ]

a. temperature and evaporation

b. rainfall and infiltration

c. rainfall and runoff

d. runoff and area of basin

46   The convictive precipitation is caused when   [   ]

a. vertical instability of moist air is produced by surface heating

b. the distribution on the air front develops into cyclone

c. the colder air raises into warm air

d. all of the above

47 In selecting a site for a rain gauge the nearest object should be at a minimum distance of [   ]

a. 30m

b. 40m

c. 50m

d. 60m

48   Consistency of Rainfall record is measured by   [   ]

a. Double Mass Curve

b. Demand curve

c. Inflow Curve

d. Mass Curve

49   The Dicken's formula for maximum flood from a catchment of area A is given by   [   ]

a. $Q=CA^{2/3}$

b. $Q=CA^{3/4}$

c. $Q=CA^{4/5}$

d. $Q=CA^{1/3}$

50   Transpiration is confirmed to   [   ]

a. Day light

b. Night time

c. all of the above

d. Afternoon

51   The quantity of water retained by the sub-soil against gravity, is known   [   ]

a. yield

b. porosity

c. specific yield

d. specific retention

52   Pick up the incorrect statement from the following :   [   ]

a. The rate of flow of water through a unit cross-sectional area under a unit hydraulic gradient, is called coefficient of permeability

b. The rate of flow of water through a vertical strip of the acquifer of unit width and full depth under a unit hydraulic gradient, is called coefficient of transmissibility

c. The flow of water through acquifers, is governed by the Darcy's law

d. The term 'transmissibility' was introduced by Meinzer

53   Example of Aquifer is   [   ]

a. Sand
b. Sandy Clay
c. Clay
d. Rock

54   If the viscosity of ground water is 1.00, the Slitcher's constant is 400, the effective size of soil particles in acquifer is 0.5 mm and hydraulic gradient is 1 in 80, the velocity of flow is,   [   ]
a. 0.25 m/day
b. 0.50 m/day
c. 0.75 m/day
d. 1.25m/day.

55   Pick up the correct statement from the following :   [   ]
a. Perched aquifer is found in unconfined aquifer
b. The top surface of the water held in the perched aquifer, is known as perched water table
c. Perched aquifer is formed in unfined accquifer if an impervious layer exists
d. All the above.

56   When Aquifer is present between two Impermeable stratum then it is called   [   ]
a. Confined Aquifer
b. Unconfined Aquifer
c. Perched aquifer
d. None of these.

57   A well penetrates to 30 m below the static water table. After 24 hours of pumping at 31.40 litres/minute, the water level in a test well at a distance of 80 m is lowered by 0.5 m and in a well 20 m away water is lowered by 1.0 m. The transmissibility of the auifer, is   [   ]
a. 1.185 m^2/minute
b. 1.285 m^2/minute
c. 1.385 m^2/minute
d. 1.485 m^2/minute

58   Shrouding is provided in   [   ]
a. cavity type tube wells
b. slotted type tube wells
c. strainer type tube wells
d. perforated type tube wells.

59   The efficiency of a pump may be taken as   [   ]
a. 0.55
b. 0.6
c. 0.65
d. 0.7

60   Pick up the correct statement from the following :   [   ]
a. The zone below water table, is called zone of saturation
b. The zone above water table, is called zone of aeration
c. The water which exists in the zone of saturation, is called ground water
d. All the above.

61   If the grain size of soil increases   [   ]
a. surface area decreases
b. specific retention decreases
c. specific yield increases
d. all the above.

62   Sand in between two rock stratum is an example of   [   ]
a. Aquifer
b. Confined Aquifer

c. Unconfined Aquifer

d. Aquitard

63   Pick up the correct statement from the following :   [   ]

a. A confined bed of impervious material laid over an acquifer, is known as an aquiclude

b. The top most water bearing strata having no acquifer, is known as non-artesion acquifer

c. The ordinary gravity wells which supply water from the top most water bearing strata, are called water table wells

d. All the above

64   Confined Aquifer is also called as   [   ]

a. Pressure Aquifer

b. Non-artesian aquifer

c. Water table aquifer

d. Saturated Aquifer

65   Darcy's law indicates   [   ]

a. V directly proportional to 2k

b. V indirectly proportional to K

c. V indirectly proportional to i

d. all the above.

66   The Dupuit formula is based on   [   ]

a. one observation well

b. two observation wells

c. three observation wells

d. no observation well

67   A well is sunk in an unconfined aquifer having a saturated depth of 100 m. Assuming the equilibrium flow conditions and a homogeneous aquifer and radius of influence to be same, the ratio of discharges at 20 m and 40 m draw downs, is   [   ]

a. 0.67

b. 1.25

c. 0.8

d. 1.14

68   Pick up the correct statement from the following :   [   ]

a. The ratio of total volume of voids in soil aggregates to the total volume of aggregate, is called Porosity

b. Water retained by the interstices due to molecular attraction, is called pellicular water

c. The ratio of volume of water obtained by gravity drainage to the total volume of the materials drained, is called 'yield'

d. All the above.

69   Isopiastic lines are the contours   [   ]

a. drawn to represent water table

b. drawn to represent piezometric heads

c. drawn to piezometric surface

d. none of these.

70   The coefficients of permeability of soils of an unconfined aquifer and another confined aquifer were determined by pumping water from the wells and observing the effect of water table in two test wells at equal distances was found to be equal. The total height of confined aquifer H is given by   [   ]

a. $H = h_2 - h_1$

b. $H = h_1 - h_2$

c. $H = h_2 + h_1$

d. $1/2 (h_1 + h_2)$

71   The radius of influence is   [   ]

a. radius of the main well

b. distance from the wall of main well to the point of zero draw down

c. distance from the centre of main well to the point of zero draw down

d. none of these.

72   When a constant discharge 2.91 litres/sec. was obtained in a pumping test, the draw downs in the test wells at 3 m and 6.184 m were 2.6 m and 0.3 m respectively. If over-all depth of the pumping well was 16 m, the permeability of the soil, is   [   ]

  a. 0.0005 cm/sec

  b. 0.001 cm/sec

  c. 0.002 cm/sec

  d. 0.01 cm/sec.

73   Clay is an example of   [   ]

a. Aquitard

b. Aquifuge

c. Aquiclude

d. Aquifer

74   The percentage of a rock's total volume that is taken up by pore space is called the __   [   ]

a. permeability

b. recharge

c. aquifer

d. porosity

75   The lowering effect on the water table about the base of the well stem is called a(n):   [   ]

a. aquiclude

b. artesian surface

c. cone of depression

d. speleothem

76   A local water table positioned above the regional water table is said to be: [   ]

a. stranded

b. perched

c. displaced

d. depressed

77   Which of the following statements about the water table is false: [   ]

a. the water table changes when discharge is not balanced by recharge

b. the water table is generally flat

c. the water table is above the land surface in lakes

d. the water table is depressed near high volume pumping wells

78   The boundary between the saturated zone and the unsaturated zone is called the___ [   ]

a. water table

b. aquifer

c. aquiclude

d. porosity

79   The infiltration of water into the subsurface is the _____ .   [   ]

a. influent

b. effluent

c. discharge

d. recharge

80   What is the term for a relatively impermeable geologic unit?   [   ]

a. an artesian

b. an aquiclude

c. an aquifer

d. none of these

81   Excessive pumping in relation to recharge can cause _____ .   [   ]
a. the water table to decline
b. a cone of depression to form
c. the well to go dry
d. all of these

82   Most groundwater withdrawn in the United States is used for _____ .   [   ]
a. industry
b. irrigation
c. drinking water
d. swimming pools

83   Most of the water coming out of continental hot springs is _____ .   [   ]
a. meteoric water
b. magmatic water
c. seawater
d. metamorphic water

84   Which one of the following features is a sure sign of karst?   [   ]
a. sinkholes
b. artesian wells
c. cones of depression
d. speleothems

85   Groundwater represents how much of the world's fresh water supply?   [   ]
a. about 1%
b. about 5%
c. about 20%
d. about 50%

86   Which of the following rocks has the highest permeability?   [   ]
a. an unfractured shale
b. a cemented sandstones
c. an uncemented sandstone
d. all of these rocks have approximately the same permeability

87   Which of the following materials has the lowest porosity?   [   ]
a. shale
b. gravel
c. granite
d. sandstone

88 What is the difference between the saturated and the unsaturated zones of ground water? [   ]
a. the saturated zone has a higher porosity than the unsaturated zone
b. the saturated zone has a lower porosity than the unsaturated zone
c. the pore spaces in the saturated zone are completely full of water; the pore spaces in the unsaturated
    zone are not completely full of water.
d. the pore spaces in the saturated zone are not completely full of water; the pore spaces in the
    unsaturated zone are completely full of water

89 The boundary between the saturated zone and the unsaturated zone is called the __   [   ]
a. water table
b. aquifer
c. aquilude
d. porosity

90   Excessive pumping in relation to recharge can cause_____ .   [   ]
a. the water table to decline

b. a cone of depression

c. the well to go dry

d. all of these

91   Which of the following can contaminate an aquifer?   [   ]

a. landfills

b. agricultural regions

c. gas stations

d. all of these

92   Water that is good enough to drink is called _____.   [   ]

a. potable water

b. groundwater

c. surface water

d. artesian water

93   Which of thefollowing phenomena results from water being pumpedfrom a well?   [   ]

a. The surrounding water table is raised in a upward-pointing cone

b. The surrounding water table is lowered in a downward-pointing cone

c. The surrounding water table is raised in a cone that points upslope

d. The surrounding water table is lowered in a cone that points downslope

94   Thedifference between the cone tip and the original water table afterwater has beendrawn from a

well is known as the _____   [   ]

a. recharge

b. runoff

c. yield

d. drawdown

95   Which of the following is the potentialresult of water table depletion?   [   ]

a. An increase in the base level of surrounding streams

b. The water table becomes more shallow

c. Volumes of groundwater increase

d. A sinking of the land known as subsidence

96   A tracer takes 100 days to travel from Well-1 to Well-2 which are 100 m apart. The elevation of water

surface in Well-2 is 3 m below that in Well-1. Assuming porosity equal to 15%, the coefficient of permeability

(expressed in m/day) is   [   ]

a. 0.3

b. 0.45

c. 1

d. 5

97   In an aquifer extending over 150 hectare, the water table was 20m below ground level. Over a period

of time the water table dropped to 23 m below the ground level . if the porosity of aquifer is 0.40 and the

specific retention is 0.15, what is the change in ground water storage of the acquifer?   [   ]

a. 67.5 ha-m

b. 112.5 ha-m

c. 180.0 ha-m

d. 450.0 ha-m

98   A wall of diameter 20 cm fully penetrates a confined aquifer. After a long period of pumping at a rate

of 2720 litres per minute, the observations of drawdown taken at 10 m and 100 m distances from the center

of the wall are found to be 3 m and 0.5 m respectively. The transmissivity of the aquifer is   [   ]

a. 676 m2/day

b. 576 m2/day

c. 526 m2/day

d. 249 m2/day

99   The relationship among specific yield (Sy), specific retention (Sr) and porosity (η) of an aquifer is [   ]
   a. Sy = Sr + η
   b. Sy = Sr − η
   c. Sy = η − Sr
   d. Sy = Sr + 2η
100   A volume of 3.0 × 106 m3 of groundwater was pumped out from an unconfined aquifer, uniformly from an area of 5 km2. The pumping lowered the water table from initial level of 102 m to 99 m. The specific yield of the aquifer is   [   ]
   a. 0.2
   b. 0.3
   c. 0.4
   d. 0.5
101   Crops grow well when they are   [   ]
   a. fertilized
   b. irrigated
   c. cared
   d. wilted
102   Most essential component for crops is   [   ]
   a. water
   b. fertilizers
   c. soil
   d. humidity
103   Crops that need a lot of water are   [   ]
   a. rice and maize
   b. wheat and maize
   c. rice and wheat
   d. maize and other grains
104   Carriage of water through pipelines and tube wells to farms is known as   [   ]
   a. Fertilization
   b. Hydration
   c. Irrigation
   d. Pollination
105   Remains of salt over soil after evaporation of water is known as   [   ]
   a. Water logging
   b. Salivation
   c. Dehydration
   d. Salivation
106   The irrigation engineering may be defined as   [   ]
   a. a science of planning and designing an efficient and economic irrigation system
   b. the engineering of controlling and harnessing the various natural sources of water, by the
       construction of dams, canals and finally distributing the water to the agricultural fields
   c. the process of artificially supplying water to soil for raising crops
   d. all of the above
107   The irrigation is necessary in an area   [   ]
   a. where there is a scanty rainfall
   b. where the rainfall is non-uniform
   c. where commercial crops require more water
   d. all of the above
108   The irrigation water is said to be unsatisfactory, if it contains   [   ]
   a. chemicals toxic to plants or to persons using plants as food

b. chemicals which react with the soil to produce unsatisfactory moisture characteristics

c. bacteria injurious to persons or animals eating plants irrigated with water

d. all of the above

109   Sandy soils with good drainage become impermeable after prolonged use, if it is irrigated with a water containing   [   ]

a. 25%

b. 75%

c. 55%

d. 85%

110   For irrigation purposes, the p-H value of water should be   [   ]

a. between 3 and 6

b. between 6 and 8.5

c. between 8.5 and 11

d. more than 11

111   Which of the salt present in water is harmful for cultivation purposes?   [   ]

a. Sodium carbonate

b. Potassium sulphate

c. Sodium chloride

d. Calcium sulphate

112   A part of water which exists in the porous space of the soil by molecular attraction, is known as   [   ]

a. capillary water

b. hygroscopic water

c. gravitational water

d. all of these

113   Super-fluous water is also called   [   ]

a. capillary water

b. hygroscopic water

c. gravitational water

d. all of these

114   The amount of water required to fill up the pore spaces in soil particles by replacing all air held in pore spaces, is known as   [   ]

a. field capacity

b. saturation capacity

c. available moisture

d. all of these

115   The moisture content of the soil, after free drainage has removed most of the gravity water, is known as   [   ]

a. field capacity

b. saturation capacity

c. available moisture

d. all of these

116   Available moisture may be defined as the   [   ]

a. moisture content at permanent wilting point

b. difference in water content of the soil between field capacity and permanent wilting

c. maximum moisture holding capacity

d. all of these

117   Sprinkler irrigation is adopted for   [   ]

a. level

b. Uneven

c. hilly

d. none

118   The method of irrigation used for orchards is   [   ]
   a. free flooding
   b. check flooding
   c. border flooding
   d. basin flooding

119   The science which deals with the physical features and conditions of water on the earth surface is
called [   ]
   a. hydrometry
   b. hydrography
   c. hydrosphere
   d. hydraulics

120   Where steep land is available, the method of irrigation adopted is   [   ]
   a. free flooding
   b. check flooding
   c. border flooding
   d. basin flooding

121   Check flooding method of irrigation is used for   [   ]
   a. closed growing crop
   b. tracts with flat gradients
   c. Crops which can stand inundation of water for sometime
   d. crops such as sugarcane, potatoes etc

122   The process of loosing water from the leaves of plants, is termed as   [   ]
   a. transpiration
   b. surface evaporation
   c. water surface evaporation
   d. precipitation

123   The saturation gradient in an ordinary loam soil is   [   ]
   a. 1:01
   b. 2:01
   c. 3:01
   d. 4:01

124   A land is said to be water-logged when   [   ]
   a. the air circulation is stopped in the root zone due to the rise in water table
   b. it is submerged in flood
   c. the doil pores within a depth of 40 cm are saturated
   d. all of the above

125   The first watering before sowing the crop, is known as   [   ]
   a. kor watering
   b. paleo
   c. deltae
   d. None