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KIITEE Ph.D Question Paper

Kalinga Institute of Industrial Technology Entrance Exam

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1. If a student misbehaves with other students in the class, the teacher should
 - (A) report the matter to the parents
 - (B) punish him at the time of the morning assembly in the school
 - (C) deal with him with sympathetic understanding
 - (D) treat him with sympathy and understanding

2. In order to make teaching more effective in the class, what should be done?
 - (A) After the teaching, the same type of questions should be given to the students for practice
 - (B) Home-work should be given frequently
 - (C) Home-work should be given now and then
 - (D) After school hours, same type of questions should be got solved from the students.

3. A teacher impresses his students
 - (A) by showing his authority and dominance
 - (B) by his regularity in teaching
 - (C) by misbehaving with his students
 - (D) by indulging in gossip with the students

4. Student should be allowed to ask questions in the class?
 - (A) No
 - (B) Yes
 - (C) Sometimes
 - (D) As per the wish of the teacher

5. How will you, as a teacher, win the heart of your students?
- (A) By doing hard work
 - (B) By maintaining strict discipline
 - (C) By acquiring mastery in your subject
 - (D) Pay heed to the personal problems of the students
6. Feeling of cooperation can be developed in the students through
- (A) lecture on cooperation
 - (B) group work
 - (C) showing pictures on cooperation
 - (D) constructive works
7. To bring improvement in teaching, a teacher should
- (A) take strict action on students' mistakes
 - (B) act against the policies of school
 - (C) correct his own mistakes
 - (D) criticize previous teachers
8. Which of the following is the correct attitude of a teacher towards students?
- (A) Supremacy
 - (B) Sympathetic
 - (C) Outspoken
 - (D) Have tolerance
9. You punished a student by mistake. His guardian calls on another senior teacher to ask about the wrong punishment. What will you do?
- (A) You will feel insulted and remove the student from the school
 - (B) You will punish the student again in presence of the guardian
 - (C) You will inform the Principal
 - (D) You will ask the guardian to leave the school premises immediately

10. Teachers' primary duty is
 - (A) to raise intellectual standard of students
 - (B) to improve physical standard of students
 - (C) to help all round development of students
 - (D) to give more and more homework to the students
11. The attitude of the Principal towards a research scholar should be
 - (A) positive and should encourage him/her to collect facts and dates
 - (B) provide all necessary support to the research scholar
 - (C) get knowledge about the subject of research scholar and give instructions to the students to provide correct information
 - (D) all of the above
12. The object of the examination should be
 - (A) fair evaluation of the performance of students
 - (B) to produce more and more graduates and post-graduates
 - (C) To create good citizens
 - (D) To collect more and more money from students
13. Teacher should take interest in research because
 - (A) he always stays busy
 - (B) he always stays educative
 - (C) his knowledge increases
 - (D) all of the above

14. The main purpose of research in education is to
- (A) help in individual's personal growth
 - (B) increase the-social prestige of an individual
 - (C) increase individual's market value of jobs
 - (D) help the individual to become an eminent educationist.
15. Inferring about the whole population on the basis of the observations made on a small part of is called
- (A) deductive inference
 - (B) inductive inference
 - (C) objective inference
 - (D) pseudo inference
16. What do you mean by synopsis of a research projects?
- (A) The blue print of research
 - (B) Extracts from the research observations
 - (C) A plan of the research
 - (D) Summary of the findings of the research
17. The advantage of sampling is
- (A) time-saving
 - (B) capital-saving
 - (C) increased accuracy
 - (D) both (A) and (B)
18. The advantages of random sampling is that
- (A) it is free from personal biases
 - (B) it produces reasonably accurate results
 - (C) it is an economical method of data collection
 - (D) all of the above

19. Tippit table is
- (A) a table of random digits
 - (B) used in statistical investigations
 - (C) used in sampling methods
 - (D) all of the above
20. Scientific methods are used in
- (A) only research projects in pure sciences
 - (B) social science researches
 - (C) both (A) and (B)
 - (D) neither of (A) and (B)
21. In which of the following cases, the formation of hypothesis may not be necessary?
- (A) Investigative historical studies
 - (B) Experimental studies
 - (C) Normative studies
 - (D) Survey studies
22. For the population with finite size which of the following sampling method is generally preferred?
- (A) Cluster sampling
 - (B) Area sampling
 - (C) Purposive sampling
 - (D) Systematic sampling

23. Research and Development (R & D) has now become the index of development of country because
- (A) R&D reflect the true economic and social conditions prevailing in a country
 - (B) R & D targets the human development
 - (C) R & D can improve the standard of living of the people in a country
 - (D) all of the above
24. Action research means
- (A) a longitudinal research
 - (B) an applied research
 - (C) research which are initiated to solve the immediate problems
 - (D) all of the above
25. Which of the following Researches emphasis primarily the factual aims?
- (A) Philosophical Researches
 - (B) Historical Researches
 - (C) Theoretical Researches
 - (D) Behavioural Researches

Direction (Q. 26 - 36) Read the following passage and answers the questions given below:

The surge witnessed in mergers, amalgamations and take-over of companies during the past few years is indicative of the shape of thing to come. While these concepts are not new and were recognized even in the Companies Act of 1913, compulsions have undergone a dramatic change. In the past, mergers and acquisitions were used largely as an instrument for revival of sick units or for obtaining tax benefits. It was not uncommon for a business house to merge a sick company with a profit making one to claim tax benefits.

The objective was not necessarily to achieve faster growth. The liberalization process witnessed during the late seventies and the eighties and particularly the relaxation of some of the restrictive provisions of MRTP Act, and FERA, brought about a qualitative change in the mergers

and amalgamations of companies. Even so, the incentive to grow was almost non-existent and in fact some companies preferred to “demerge” by splitting one company into two or more so as to escape from the harsh provision of the MRTP Act.

The past pace of liberalization since July 1991 and the time-bound programme of structural reforms under pressure from the IMF and the World Bank have shaken the Indian industry from a slumber by exposing it to internal as well as international competition. Not surprisingly, the pressure is building up on every enterprise to modernize and expand to cut costs. Gone are the days of the license and permit raj, high import duties and the prosperity guaranteed by a “sellers’ market” with the rising threat of competitions and the “sellers’ market” giving way to a “buyers’ market” in a large number of industries, the compulsion to look for economies of scale in production and cutting down the selling cost is increasing. Simultaneously, the virtual scrapping of the MRTP provisions and relaxation in FERA have removed the disincentive to grow. Hence mergers, amalgamations and take-overs have assumed greater importance. Mergers and acquisitions have now come to represent a short-cut for companies to achieve accelerated growth. This is the trend world over and India cannot remain an exception as it moves towards globalization.

26. What was the motive of some companies to resort to demerger?
- (A) To boost their productivity and profitability
 - (B) To bypass the unfavourable legal provisions
 - (C) To bring about qualitative changes
 - (D) None of these
27. The phrase “sellers’ market giving way to Buyers’ market” means
- (A) increase in production is proportionate to the demand
 - (B) increase in demand is disproportionately higher than the supply
 - (C) market is financially in favour of consumers as compared to in the past
 - (D) industry’s profit margin is enhanced

28. Which of the following is true about Indian Industry's scenario prior to July 1991?
- (A) There had been pressures from the World Bank and the IMF
 - (B) It was exposed to serve competition on national and international fronts
 - (C) Structural reform programmes were planned and implemented
 - (D) None of these
29. Which of the following is not an outcome of Indian industry's exposure to competition?
- (A) Switching over to expansion
 - (B) Adopting new technologies
 - (C) Guarantee for Profits and Prosperity
 - (D) Need for obtaining licenses and permits
30. For which of the following were the amalgamations largely used in the past?
- (A) Saving on Taxes payable to the Government
 - (B) Forcing the Government to adopt liberalization process
 - (C) To achieve accelerated growth
 - (D) Overcoming the provision of revival of sick units
31. The mergers of companies in the past and present differ in respect of which of the following?
- (A) Tax benefits
 - (B) Pace of growth
 - (C) Modalities
 - (D) Profit percentage

32. Which of the following is true about Government's on import duties?
- (A) Import duty is lowered in order to encourage imports
 - (B) Import duty is raised in order to discourage buying of foreign good
 - (C) Import duty is now lowered to encourage healthy competition
 - (D) Import duty is lowered in order to enable Indian industrialists to adopt foreign technology
33. The changing scenario, as described in the passage, is most likely to result into:
- (A) exorbitant profit margin to industry despite financial respite to consumers
 - (B) reasonable profit margin to industry and marginally higher cost to buyers
 - (C) marginal losses to industry and considerable benefits to buyers
 - (D) adequate profit margin to industry despite lower prices
34. The term "demerge" as used in the passage means:
- (A) formulation of two or more companies out of an existing one
 - (B) re-union of companies which had split out of one company
 - (C) separation of two or more companies which had merged into one
 - (D) renaming a company to claim tax benefits
35. Which of the following inference can be drawn from the passage?
- (A) In the eighties, the change in FERA and MRTP provisions provided the necessary impetus for growth
 - (B) FERA provisions were counter-productive to industrial growth earlier
 - (C) It is only the external financing agencies' pressure that has compelled Indian industry to adopt the present structure
 - (D) Most of the business houses were not inclined for using the merger-tactics for revival of sick units

36. Which of the following groups of statements is true in the context of the passage?

Statement (A): FERA and MRTP provisions were not conducive to industrial growth earlier.

Statement (B): Unlike in the rest of the world, in India merger of companies is a way to achieve accelerated growth.

Statement (C): The Indian industry shall have to find out profit sources other than from customers' pocket.

(A) Only (A) and (C) are correct

(B) All the three statements are correct

(C) Only (A) and (B) are correct

(D) Only (B) and (C) are correct

37. Which number will complete series given below?
198, 194, 185, 169?

(A) 136

(B) 144

(C) 112

(D) 92

38. How many 1 (s) is/ are there in the following sequence which is/ are immediately preceded by 9 but not immediately followed by 7?

7 1 9 7 1 8 9 1 7 1 2 1 3 1 4 5 7 1 3 9 1 7

(A) One

(B) Two

(C) Three

(D) Four

39. 'Knowledge' is related to 'Ignorance' in the same way as 'intelligent' is related to

(A) brilliant

(B) dull

(C) light

(D) fast

40. Started walking towards East and after walking 20 m, turned to my left and walked 15 m. Then, I turned to my left and walked 20 m. Again I turned to my left and walked 15 m. Now, I am walking in which direction with respect to the starting point?
- (A) South (B) North
(C) East (D) West
41. In a certain code SURVEY is written as 846729, and FORT is written as 1563. How would FROST be written in that code?
- (A) 16583 (B) 15683
(C) 16538 (D) 16573
42. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
- (A) Library (B) Book
(C) Journal (D) Magazine
43. If every alternate position is dropped starting from G in the following letter-number sequence, then how many letters-numbers will be left?
A2CD5FGH9KMP13LEBCUN801RVTXZ
- (A) 18 (B) 16
(C) 15 (D) 17
44. With reference to “Look East Policy” of India consider the following statements:
1. India wants to establish itself as an important regional player in the East Asian affairs.
 2. India wants to plug the vacuum created by the termination of Cold war.
 3. India wants to restore the historical and cultural ties with its neighbours in Southeast and East Asia.
- Which of the statements given above is/ are correct?
- (A) 1 only (B) 1 and 3 only
(C) 3 only (D) 1, 2 & 3

45. Which of the following countries is not a member of the Nuclear Suppliers Group (NSG) ?
- (A) Russia
 - (B) USA
 - (C) Italy
 - (D) Iran
46. Which of the following is/ are treated as artificial currency?
- (A) ADR
 - (B) GDR
 - (C) Both ADR & GDR
 - (D) SDR
47. Who among the following was not part of the drafting committee of the Lokpal Bill?
- (A) Salman Khurshid
 - (B) Anna Hazare
 - (C) Arvind Kejriwal
 - (D) Kiran Bedi
48. Who among the following is often referred to as father of India's "Green Revolution"?
- (A) Dr. Varghese Kurien
 - (B) Dr. Amrita Patel
 - (C) M. S. Swaminathan
 - (D) Gurudev Khush

49. The point at which solid, liquid and gaseous forms of a substance co-exist is called
- (A) sublimation point
 - (B) distillation point
 - (C) triple point
 - (D) melting point
50. Which of these countries has announced one billion US dollar aid for the reconstruction of Nalanda University?
- (A) Japan
 - (B) Singapore
 - (C) Malasia
 - (D) China

PhD ELECTRICAL ENGINEERING

1.	<p>A series L-C-R circuit has a resonant frequency f_0, with $R = 1\Omega$, $L = 1\text{ H}$ and $C = 1\text{ F}$. If the L-C-R values are tripled, the new resonant frequency will be</p> <p>(a) $3f_0$ (b) Unaltered (c) $f_0/\sqrt{3}$ (d) $f_0/3$</p>	
2.	<p>For the driving point impedance function of a circuit is</p> $Z(s) = \frac{s + \alpha}{s + \beta}$ <p>Where α and β are real Then voltage will lead the current if α and β are</p> <p>(a) Positive and $\alpha > \beta$ (b) positive and $\alpha < \beta$ (c) Positive and real negative, respectively (d) negative and real positive, respectively</p>	
3.	<p>If a voltage waveform connected to an R-L circuit is switched on at an angle α and θ is the impedance angle of the R-L circuit, there will be no transient when</p> <p>(a) $\alpha = \theta$ (b) $\alpha = 90 - \theta$ (c) $\alpha = 90 + \theta$ (d) None of the above.</p>	
4.	<p>When maximum power is transferred from a voltage source to a load then the efficiency of the system will be</p> <p>(a) 50% (b) 80% (c) 20% (d) 100%</p>	
5.	<p>A 100 W bulb is connected in series with a room heater of 750 W. If the bulb is replaced by a 60W bulb then</p> <p>(a) Heater output will increase (b) Heater output will decrease (c) Heater output will remain unchanged (d) Bulb will not glow.</p>	
6.	<p>Two equal resistors R connected in series across a voltage source V dissipate total power P. What would be the total power dissipated in the same resistors when they are connected in parallel across the same voltage source ?</p> <p>A. 4P B. P C. 2P D. 16P</p>	

PhD Question (Civil Engineering)

1. The relation between void ratio (e), degree of saturation (s), water content (w) and specific gravity of solids (G) is given by

(a) $e+s=w+G$

(b) $e \times s = w \times G$

(c) $\frac{e}{s} = \frac{w}{G}$

(d) $\frac{s+e}{w} = \frac{G+e}{s}$

2. The degree of saturation for the moist soil is about

(a) 0%

(b) 1 to 25%

(c) 25 to 50%

(d) 50 to 75%

3. Which of the following clay mineral gives maximum swelling?

(a) Kalonite

(b) Montmorillonite

(c) Illite

(d) all of these

4. According to Pycnometer method, the specific gravity of soil solids (G) is given by

(a) $G = \frac{M_1 + M_2}{M_1 - M_2 + M_3 - M_4}$

(b) $G = \frac{M_1 + M_3}{M_1 + M_2 - M_3 - M_4}$

(c) $G = \frac{M_2 - M_1}{M_2 + M_4 - M_1 - M_3}$

(d) $G = \frac{M_1 + M_2}{M_2 + M_4 - M_1 - M_3}$

Where M_1 = Mass of Pycnometer

M_2 = Mass of Pycnometer and dry soil,

M_3 = Mass of Pycnometer, soil solids and water, and

M_4 =Mass of Pycnometer and Water,

5. The liquidity index (in percentage) is given by

(a) $\frac{w_p - w}{I_p}$

(b) $\frac{w_L - w}{I_p}$

(c) $\frac{w_L - w_p}{I_p}$

(d) $\frac{w - w_p}{I_p}$

6. A flow net constructed to determine the seepage through an earth dam which is homogeneous but anisotropic, gave 4 flow channels and 16 equipotential drops. The coefficients of permeability in the horizontal and vertical directions are 4×10^{-7} m/s and 1×10^{-7} m/s respectively, If the storage head is 20 m, then the seepage per unit length of the dam in m^3/s , will be

(a) 5×10^{-7}

(b) 10×10^{-7}

(c) 20×10^{-7}

(d) 40×10^{-7}

7. In case of coarse grained sand having high permeability and low plasticity, 95% of consolidation occurs within.....after application of load.

(a) 1 minute

(b) 30 minutes

(c) 1 hour

(d) 2 hour

8. The relation between coefficient of consolidation (c_v), time factor (T_v), drainage path (d) and time (t) is given by

(a) $c_v = \frac{d^2 \cdot T_v}{t}$

(b) $c_v = \frac{d^2 \cdot t}{T_v}$

(c) $c_v = \frac{T_v \cdot t}{d^2}$

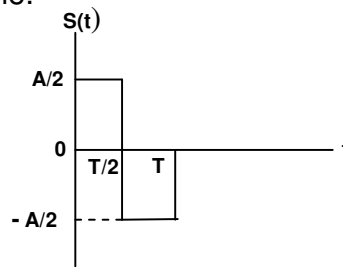
(d) $c_v = \frac{T_v}{d^2 \cdot t}$

ELECTRONICS & TELECOMMUNICATION ENGINEERING

Question No. 1 - 5 carries 3 marks each

1. A transmission line of characteristic impedance 50 ohm is terminated by a load resistance of 85 ohm. Find reflection coefficient and VSWR of the line.

2. Determine the impulse response of a matched filter to the signal $S(t)$, shown in figure below, and sketch it as a function of time and plot the matched filter output as a function of time.



3. There are 6 co-channel cells in a cellular system and path loss exponent is 3. Calculate the signal-to-interference ratio of the cellular system using frequency reuse factor of $1/12$.

PhD (Mechanical Engineering)

PART- A

01. A mild steel rod has length of 80mm and a tapered portion length 50mm. The large diameter of taper is 90mm and small diameter is 80mm. For tapering such length the tail stock set over will be
(A) 12mm (B) 8mm (C) 10mm (D) 4mm
02. It is required to cut a screw having 7mm pitch on a lathe having lead screw of 4 threads per inch. The set of gears required for threading operation are
(A) 70, 40, 127, 20 (B) 50, 40, 127, 20 (C) 80,20,60,40 (D) 80,60,30,50
03. The relation for cutting tool life is given as $VT^n=C$ Where V is cutting speed, T is corresponding life, n and C are constants depending on cutting conditions. The numerical value of n for roughing cut as compared to that for light cuts in mild steel would be
(A) More (B) Less (C) same (D) Does not depend on type of cut
04. Spindle speed in a lathe for turning a 40cm dia. Rod at a cutting speed of 30 m/min would be
(A) 10 rpm (B) 20.6 rpm (C) 23.8 rpm (D) 33.6 rpm
05. If a cutting tool is designated as $0^0-10^0-6^0-6^0-8^0-75^0-1\text{mm}$, what is the side cutting edge angle of the tool?
(A) 0^0 (B) 10^0 (C) 6^0 (D) 75^0
06. The coefficient of friction between chip and tool is the variable. It can be reduced by
(A) Reducing the width of tool (B) Reducing the depth of cut
(C) Reducing the effective rake angle (D) None of above
07. A special form of piercing in which the entire contour is not cut, is known as
(A) Lancing (B) Slitting (C) Trimming (D) Slotting
08. Calculate the time to shape a plate 500x900mm size when the cutting speed is 10 m/min and return to cutting time ratio is 1:4. Take feed as 3mm and clearance at each end 70mm.
(A) 48 min (B) 24min (C) 12min (D) 25min
09. The shear angle ϕ is
(A) $\tan^{-1}\left(\frac{r \cos \alpha}{1 - r \sin \alpha}\right)$ (B) $\tan^{-1}\left(\frac{r \sin \alpha}{1 - r \cos \alpha}\right)$ (C) $\sin^{-1}\left(\frac{r \sin \alpha}{1 - r \cos \alpha}\right)$ (D) $\sin^{-1}\left(\frac{r \cos \alpha}{1 - r \sin \alpha}\right)$

Question No. 1 - 5 carries 3 marks each

1. Which of the following can be expressed by a Boolean formula in the Boolean variables p_1, p_2, p_3, p_4 (Negation of variable not allowed) and the connectives \wedge (AND) and \vee (OR) only:

- (A) At least three of p_1, p_2, p_3, p_4 are true.
- (B) Exactly three of p_1, p_2, p_3, p_4 are true.
- (C) An even number of p_1, p_2, p_3, p_4 are true.

2. What is the number of 1's in the binary representation of the decimal expression $16^3 \times 9 + 16^2 \times 7 + 16 \times 5 + 3$.

3. The clock frequency of a microprocessor is 100 MHz. What is its clock period?

Ph. D.PHYSICS

- The wave function of a Gaussian wave packet is given by $\psi(x) = A \exp\left[ikx - \frac{x^2}{2\alpha^2}\right]$. The value of factor A is
(a) $\frac{1}{\sqrt{\pi\alpha}}$ (b) $\frac{1}{\pi\alpha}$ (c) $\frac{1}{\sqrt{\pi}\alpha}$ (d) $\frac{1}{\sqrt{\alpha}\sqrt{\pi}}$
- The de Broglie wave length for an electron of energy 54 eV is
(a) 0.67 Å (b) 1.67 Å (c) 2.67 Å (d) 3.67 Å
- Which one is correct for a photon
(a) finite rest mass and spin $\frac{1}{2}$ (b) finite rest mass and spin 1
(c) zero rest mass and spin $\frac{1}{2}$ (d) zero rest mass and spin 1
- Energy operator for a quantum system is
(a) $i\hbar \frac{\partial}{\partial x}$ (b) $i\hbar \frac{\partial}{\partial p}$ (c) $i\hbar \frac{\partial}{\partial t}$ (d) $-i\hbar \frac{\partial}{\partial t}$
- The product of uncertainty in two conjugate variables has the dimension of
(a) force (b) energy (c) angular momentum (d) torque
- Which of the following wave functions is acceptable in quantum mechanics
(a) $\tan x$ (b) $\cot x$ (c) $\operatorname{cosec} x$ (d) $\sin x$
- If the ground state energy of a one dimensional finite potential well is E_0 , what will be its energy in the third energy state?
(a) E_0 (b) $3 E_0$ (c) $16 E_0$ (d) $9 E_0$
- When a particle of total energy greater than the potential energy of a single step barrier is incident on it, which of the following will not happen
(a) reflection (b) transmission
(c) reflection and transmission (d) transmission but no reflection
- If a generalized co-ordinate is cyclic, which quantity is conserved?
(a) torque (b) energy (c) momentum (d) mass
- The conservation of angular momentum in a central force field leads to conservation of
(a) energy (b) areal velocity (c) linear momentum (d) time period
- The Lagrangian of a system is given by
(a) $T+V$ (b) $T-V$ (c) $H+V$ (d) $H-V$
- If a generalized coordinate has the dimension of momentum, the generalized velocity will have the dimension of
(a) torque (b) force (c) acceleration (d) velocity
- For attractive inverse square law of force, which is not the shape of the orbit
(a) elliptic (b) parabolic (c) hyperbolic (d) straight line
- For a system of two bodies with masses in the ratio 1:2, the reduced mass of the system is
(a) $\frac{1}{3}$ (b) $\frac{2}{3}$ (c) 1 (d) $\frac{4}{3}$
- For a homogeneous cube of density d , mass M and sides a , the moment of inertia coefficients are
(a) $\frac{1}{3} b$ (b) $\frac{2}{3} b$ (c) b (d) $\frac{4}{3} b$
(Given $b=Ma^2$)

KITEE 2013 (Ph.D *Chemistry*)

1. A disaccharide that will not give Benedict's test and will not form osazone is
(A) Maltose (B) Lactose (C) Cellobiose (D) Sucrose
2. The bond that gives the most intense band in the infrared spectrum for its stretching vibration is
(A) C—H (B) N—H (C) O—H (D) S—H

3. For a reaction involving two steps given below



assume that the first step attains equilibrium rapidly. The rate of formation of **P** is proportional to

- (A) $[G]^{1/2}$ (B) $[G]$ (C) $[G]^2$ (D) $[G]^{3/2}$
4. The enthalpies of hydration of Ca^{2+} , Mn^{2+} and Zn^{2+} follow the order
(A) $\text{Mn}^{2+} > \text{Ca}^{2+} > \text{Zn}^{2+}$
(B) $\text{Zn}^{2+} > \text{Ca}^{2+} > \text{Mn}^{2+}$
(C) $\text{Mn}^{2+} > \text{Zn}^{2+} > \text{Ca}^{2+}$
(D) $\text{Zn}^{2+} > \text{Mn}^{2+} > \text{Ca}^{2+}$
 5. The number of terminal carbonyl groups present in $\text{Fe}_2(\text{CO})_9$ is
(A) 2 (B) 5 (C) 6 (D) 3
 6. Among the following substituted silanes, the one that gives cross-linked silicone polymer upon hydrolysis is
(A) $(\text{CH}_3)_4\text{Si}$ (B) CH_3SiCl_3 (C) $(\text{CH}_3)_2\text{SiCl}_2$ (D) $(\text{CH}_3)_3\text{SiCl}$
 7. Among the following donors, the one that forms most stable adduct with the Lewis acid $\text{B}(\text{CH}_3)_3$ is
(A) 4-methylpyridine
(B) 2,6-dimethylpyridine
(C) 4-nitropyridine
(D) 2,6-di-*tert*-butylpyridine
 8. The IUPAC nomenclature of $\text{Na}[\text{PCl}_6]$ is
(A) sodium hexachlorophosphine(V)
(B) sodium hexachlorophosphate(V)
(C) sodium hexachlorophosphine
(D) sodium hexachlorophosphite(V)

Ph. D. MATH

- 1) If $K = \{(x, y): x \geq 0, y \geq 0\} \subset \mathbb{R}^2$, then K is
- (a) bounded
 - (b) closed
 - (c) open
 - (d) None of the above.
- 2) The sphere $S^n = \{x \in \mathbb{R}^{n+1}: \|x\| = 1\}$ is a
- (a) Vector space
 - (b) Connected and convex
 - (c) Closed and convex
 - (d) Closed n -manifolds.
- 3) If $f, g \in \mathbb{R}[a, b]$, then the value of the integral $\int_a^b f(x)g(x)dx$ is less than or equal to
- (a) $\sqrt{\int_a^b f(x)dx} \sqrt{\int_a^b g(x)dx}$
 - (b) $\sqrt{\int_a^b f^2(x)dx} \sqrt{\int_a^b g^2(x)dx}$
 - (c) $\int_a^b f(x)dx \int_a^b g(x)dx$
 - (d) None of the above.
- 4) If there exist a finite number of open sets $A_i \subset A, i = 1, 2, \dots, n$ such that $\bigcup_{i=1}^n A_i = A$ then A is
- (a) closed
 - (b) bounded
 - (c) countable
 - (d) compact.
- 5) The dual space of X is X if X is a
- (a) Banach space
 - (b) Hilbert space
 - (c) Hausdorff space
 - (d) none of the above.
- 6) A Banach space X is reflexive if the map $J: X \rightarrow X^{**}$ (X^* is dual of X) is
- (a) Surjective
 - (b) Bijective
 - (c) Injective
 - (d) none of the above.

ENGLISH

Question No. 1 - 5 carries 3 marks each

1. Write out briefly the influence of Reformation on English Literature.

2. How will you comment upon Milton's 'Paradise Lost'?"

3. Why did the writing of satire acquire new importance in the age of Dryden?

BIOTECHNOLOGY

Question No. 1- 5 carries 3 marks each

1. Why do ribosomes move along mRNA during translation?

2. Describe the basic principle of ELISA

3. What is the name of the cytoplasm division in the end of mitosis? What are the differences in this process between animal and plant cells?

Ph.D. (Economics)

1. The difference between average total cost and average fixed cost shows
 - (a) Normal profits
 - (b) Implicit costs
 - (c) Variable costs
 - (d) Opportunity costs
2. The difference between average cost and average revenue is
 - (a) Total profit
 - (b) Average profit
 - (c) Net profit
 - (d) Gross profit
 - (e) Marginal profit
3. All the following curves are U-shaped except
 - (a) The AVC curve
 - (b) The AFC curve
 - (c) The AC curve
 - (d) The MC curve
4. MC is given by
 - (a) The slope of the TFC curve
 - (b) The slope of the TVC curve but not by the slope of the TC curve
 - (c) The slope of the TC curve but not by the slope of the TVC curve
 - (d) Either the slope of the TVC curve or the slope of the TC curve
5. The MC curve reaches its minimum point before the AVC curve and the AC curve. In addition, the MC curve intersects the AVC curve and the AC curve at their lowest points. The above statement are both true
 - (a) Always
 - (b) Never
 - (c) Often
 - (d) Sometimes
6. Match the following
 - A) Opportunity costs
 - B) Social costs
 - C) Implicit cost
 - D) Explicit cost
 - i) Air pollution
 - ii) Normal profits
 - iii) Wage payments interest payments
 - iv) Value of labour in alternative jobs
 - (a) A+ii, B+iii, C+iv, D+i
 - (b) A+iv, B+i, C+ii, D+iii
 - (c) A+iv, B+i, C+iii, D+ii
 - (d) A+i, B+iv, C+ii, D+iii
7. At the shut-down point
 - (a) $P=AVC$
 - (b) $TR=TVC$
 - (c) The total losses of the firm equal TFC
 - (d) All the above
8. At the best short-run level of output, the firm will be
 - (a) maximizing total profits
 - (b) maximizing total losses
 - (c) either maximizing total profits or minimizing total losses
 - (d) maximizing profits per unit

LAW

Question No. 1 - 5 carries 3 marks each

1. What is the present position of the rule in *Rylands v. Fletcher* in India?

2. Who is a servant for the purpose of Vicarious Liability?

3. Define extortion under Indian Penal Code.

PHD(MANAGEMENT)

SI No	Question	A	B	C	D
1	Ability, an important individual level variable of organizational effectiveness relates to	Individuals current capacity to perform the various tasks in a job	The sum total of an individuals knowledge, skills and personality	The biographical characteristics	Level of competency
2	Emotions are	Reflections of individuals current capacity to perform tasks in a job	The relative strength and weaknesses	Intense feelings directed at someone or something	Sum total ways in which individuals react to others
3	Values represent	Processes that accounts for an individual's intentions and persistence of efforts	An individual's personality	An individual's ability	Basic convictions that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end state of existence
4	Motivation relates to	A process of developing positive attitude	Processes that account for an individuals intensity, direction and persistence of efforts to attaining a goal	A process that account for the willingness to take responsibility	A process that account for developing personality
5	Work Team refers to	a group whose individual efforts results in performance that is greater than the sum of the individual inputs	a group working on independent tasks	a group associated with goal setting	a group engaged in team building
6	Leadership refers to	the ability manage subordinates	the ability to achieve desired results	the ability to influence a group towards the achievement of a vision or a set of goals	the ability to develop teams

PhD Rural Management
KIIT University

Instructions-

- a) Please (✓) the appropriate answer (b) All questions are compulsory

1. An economy is at the 'take off' stage on its path to development when it

- (a) Becomes stagnant (b) begins steady growth (c) is liberalized (d) gets maximum foreign aid

2. Panchayati Raj system is having

- (a) Two levels (b) Three levels (c) Four Levels (d) None of these

3. Who made the famous statement that "only 15% of the money reaches the intended"?

- (a) Indira Gandhi (b) Sonia Gandhi (c) Rajiv Gandhi (d) Atal Bihari Vajpayee

4. *Swatch*, is a recently launched low cost water purifier by

- (a) Tata (b) Hindustan Uniliver (c) Kent (d) Eureka Forbes

5. Which is not true for Block Development Officer?

- (a) Appointed by the Government (b) Working at Taluka or Block level
(c) The leader of the Block (d) Elected person by people

6. Attaining growth with social justice needs tackling of the problem of

- (a) Inequality (b) Inefficiency (c) Corruption (d) Population

7. Which one of the following is not related to climate change?

- (a) Increasing Salinity of soil (b) Scarcity of Water
(c) Population growth (d) Natural Calamities

8. Gram panchayat has tenure of

- (a) 5 Years (b) 3 Years (c) Based on Village Population (d) 6 Years

Ph.D.
SOCIOLOGY

1. Which of the following statements about culture are correct?
 - (a) Each culture is holistic
 - (b) Culture complex is the smallest unit of culture
 - (c) **Culture is shared in common by the members**
 - (d) Physical and biological features of people are determined by culture

2. A social institution is:
 - (a) **An established procedure that regulates human behaviour**
 - (b) A place where social functions are organized
 - (c) An organization where social positions are formally defined
 - (d) An organization that administers social service

3. According to Robert K. Merton, a role set is
 - (a) A set of roles performed by the members in any group
 - (b) **An array of associated roles related to particular social status**
 - (c) A set of roles of equal statuses in any group
 - (d) An array of roles hierarchically ordered in any group

4. A group to which we compare ourselves when we judge our own status is called
 - (a) Kin group
 - (b) Peer group
 - (c) Secondary group
 - (d) **Reference group**

5. Which of the following does NOT represent ascribed status?
 - (a) **A father**
 - (b) A priest
 - (c) A brahmin
 - (d) A neta

6. Which one of the following concepts implies that each social status involves not a single associated role but an array of roles?
 - (a) Multiple roles
 - (b) Status sequence
 - (c) **Role-set**
 - (d) Status-set

7. According to the theory of cultural lag
 - (a) Both material as well as non-material culture undergo changes simultaneously
 - (b) Changes in non-material culture are faster
 - (c) **Material culture changes faster than non-material culture**
 - (d) Sometimes material culture and at other times non-material culture changes faster